

A black silhouette of a person stands on the right side of the cover, facing left. A large, light green circle is centered on the left side of the cover, and a curved line of the same color arcs from the top right towards the bottom left, intersecting the circle.

Multiple- choice Questions in Accident and Emergency

with explanatory
answers

A. Mark Dalton

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A. Mark Dalton FRCS (A&E) Ed

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MACMILLAN

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INTRODUCTION

Accident and emergency medicine has emerged as a speciality in its own right. As such, more emphasis is being placed on education and training at both undergraduate and postgraduate levels in the acute management of medical and surgical emergencies. This is reflected in the increasing importance given to accident and emergency medicine in examinations at all levels.

This book is primarily intended for both medical students studying for their final examinations, and medical, surgical and A&E specialists studying for the MRCP, FRCS or FRCS (A&E) examinations.

All the multiple-choice questions are in standard format, i.e. a stem question with five answers, each of which may be either true or false. Using the negative marking system (one mark for a correct answer, nothing if the question is left out and a mark off for a wrong answer), final-year medical students achieve average marks of 40-45%.

Each question and answer is accompanied by an explanation on the opposite page. In many instances, where related questions appear, the explanation given will apply to the group of related questions. The questions are of variable difficulty. The explanations are not intended to be exhaustive, but merely highlight some of the most important aspects of accident and emergency medicine.

PSYCHIATRY

1 Delirium tremens

- A Usually occurs after a single heavy drinking binge the night before presentation
- B May include visual, auditory or tactile hallucinations
- C Is usually treated with chlorpromazine by intravenous drip
- D Thiamine should be given to prevent the precipitation of Wernicke's encephalopathy
- E May be fatal

2 Hysteria

- A May cause aphonia
- B May lead to paralysis of an arm
- C Is associated with complacency in the presence of gross objective disability
- D May be the presenting feature of schizophrenia
- E Can cause blindness

3 Symptoms characteristic of depressive illness are

- A Loss of energy
- B Loss of weight
- C Loss of concentration
- D Loss of insight
- E Loss of memory

BDE This uncommon condition occurs owing to a sudden withdrawal of alcohol after a binge lasting at least two weeks. The patient may be disorientated, and profoundly agitated, and may present with visual, auditory or tactile hallucinations and marked tremor. The condition may be complicated by fits, hyperthermia, dehydration, electrolyte disturbance and pneumonia, which may prove fatal. The treatment of choice is chlormethiazole (Heminevrin) via intravenous infusion in sufficient doses to keep the patient sleeping lightly. Up to 1000 ml of 0.8% solution are needed in the first 12 h. Electrolyte imbalance must be corrected. Long-term management of alcohol addiction should be initiated.

ABCE The word hysteria is a convenient collective term used to describe conversion and dissociative disorders. It occurs owing to extreme anxiety and can present with aphonia, sensory disturbances, or, more rarely, sudden paralysis of a limb. Often the patient appears to be able to dissociate himself from what seem to be gross abnormalities (*la belle indifférence*, described by Janet). Management involves reassurance, combined with the resolution of any stressful circumstances that provoked the reaction. Psychotherapy has been used in the treatment of hysterical neurosis, but there are no controlled studies of its effectiveness. Long-term prognosis is often poor.

ABC Depressed patients do not characteristically lose insight and are often only too painfully aware of their problems. They complain of lack of energy and short attention spans, and may either gain or lose weight. They are irritable and suffer anxiety and hopelessness, pessimistic thoughts, delusions, reduced sexual interest and self-neglect. Presenting features in the A&E department may be the results of attempted suicide. All such cases should be referred to the on-call psychiatric team after treatment of the physical injuries.

4 Increased rate of suicide is associated with

- A The female sex
- B Teenagers
- C A broken home in childhood
- D Retirement
- E War

5 Suicide

- A Is more likely in those who have attempted it before
- B Is statutorily notifiable to the police
- C May be associated with hypochondriasis
- D Becomes more likely if the patient is allowed to talk about it
- E Is more likely if the patient is seriously ill

6 Acute confusion

- A Is often associated with visual hallucinations
- B Is often caused by an exacerbation of a pre-existing psychiatric condition
- C May result from alcohol withdrawal
- D Usually resolves spontaneously
- E May be precipitated by pneumonia

7 Acute confusional states

- A Are often associated with signs of organic disease
- B Usually have a protracted history
- C May follow myocardial infarction
- D Should be treated with psychiatric counselling
- E Should be treated with phenothiazine drugs

CD The suicide rate in England and Wales is about 5000 per annum. There were 50000 admissions in 1964 (compared with 16000 in 1957) accounting for almost 7% of all admissions to general medical and surgical beds. Today the figure stands at possibly 150000 per annum, over 30 times the (completed) suicide rate. About 15% of all manic depressive patients will eventually commit suicide.

ACE Features associated with suicide include feelings of guilt and hopelessness, fear of losing control, unsympathetic relatives, panic reactions (after 'crimes') and symbolic actions, such as giving away possessions.

The elderly, retired, or recently bereaved man, now living alone in poor conditions in a densely populated city, is at a much higher risk of suicide than other sections of society.

Talk of suicidal intent or recent suicide attempts should be taken very seriously indeed, and warrant immediate psychiatric advice.

Management of the patient at risk in the A&E department requires a sensitive and understanding approach. Patients must be allowed to talk about their feelings so that they feel that their problems are indeed being taken seriously. Prodromal clues must be recognised, safer drugs prescribed if possible and the patient reassured that all is not lost. The on-call psychiatric team must be notified of all cases of attempted suicide.

ACE Acute confusional states are a commonly encountered problem in the A&E department. There is characteristically a short history of increasing confusion, often associated with other signs of organic disease, such as pneumonia or myocardial infarction. Acute confusion may also follow sudden withdrawal of depressant drugs such as alcohol or barbiturates, and is typically associated with visual hallucinations.

Treatment is based on the management of the underlying cause. All patients will require baseline investigations,

AC including chest radiography, electrocardiogram, full blood count, liver function tests and electrolyte estimation while in the A&E department. Further investigation should be carried out by the medical team.

8 Patients who have taken a significant overdose of tricyclic antidepressants

- A May present with visual hallucinations
- B Should be treated with gastric lavage if the ingestion has occurred in the previous 12 h
- C Typically have small, sluggishly reacting pupils
- D Require close cardiac monitoring
- E Can be allowed home if their electrocardiogram (ECG) is normal

PHARMACOLOGY

9 Local anaesthetics

- A Work by increasing the permeability of the nerve membrane to sodium
- B Work more quickly on large than on small nerve fibres
- C Are weak acids
- D Should not be used in spinal anaesthesia
- E May be esters or amines

10 Lignocaine

- A May be used as a topical anaesthetic
- B Can cause generalised convulsions in overdose
- C Should be administered with adrenaline for digital nerve blocks to enhance the effect
- D Possesses class I antiarrhythmic activity
- E Works more quickly as a local anaesthetic in concentrations of 2% rather than 1%

ABD These patients often present with various anticholinergic side-effects, such as dilated pupils, tachycardia and dry mouth. Occasionally there may be psychiatric sequelae, including visual hallucinations. Cardiac arrhythmias are a well recognised complication, so that all patients should be managed on a cardiac monitor. Because of its anticholinergic effects, gastric emptying is delayed, and therefore gastric lavage is indicated up to 12 h after ingestion. The patient must be transferred to the on-call medical team for further monitoring, which is especially important in the first 24 h.

E Peripheral nerve transmission is associated with depolarisation of the cell membrane as a result of increased permeability to sodium ions. Local anaesthetic agents produce a localised, reversible block to nerve conduction by displacing calcium from the receptor sites on the internal surface of the cell membrane, resulting in blockade of the membrane sodium channel.

ABDE Local anaesthetics are weak bases, with pK_a values between 7.5 (mepivacaine) and 8.9 (procaine). They exert their effect more quickly on the smaller nerve fibres rather than the larger ones. This is significant when performing local peripheral nerve blocks. Sufficient time must be allowed for the anaesthetic to take effect.

Lignocaine reduces the excitability of the myocardium and is used in ventricular arrhythmias. When used as a local anaesthetic, it acts more quickly in higher concentrations, although care must be taken at these concentrations, since the maximum safe dosage may easily be exceeded, especially in children. 0.5% solutions are safer and are often all that is required. As a general rule, the maximum dose given should not exceed 3-5 mg/kg when given without adrenaline, and 7 mg/kg when adrenaline is added. 1 ml of 1% solution contains 10 mg of lignocaine.

Adrenaline should never be used in local anaesthesia to a digit, since the resulting arterial spasm may lead to ischaemia and gangrene of the affected part. Complications of overdose include generalised convulsions.

11 Tetanus toxoid

- A Confers passive immunity
- B Should be given for all human bites, regardless of previous prophylaxis
- C Should be given as a course of three injections, if the immune status of the patient is unknown
- D Should not be given at the same time as human immunoglobulin
- E May cause anaphylaxis

12 Benzodiazepines

- A Cause relief of anxiety
- B Increase the amount of REM (rapid eye movement) sleep
- C Are useful in the treatment of acute neck sprain
- D May cause loss of memory
- E May cause disinhibition, especially in the elderly

13 Benzodiazepines

- A Are uncommon causes of death from drug overdose
- B May be useful in the management of acute neck sprain
- C Include the anxiolytic chlorpromazine
- D Should not be used in children
- E Can be administered by the intravenous, oral, or rectal route

14 Benzodiazepine overdose

- A Is uncommon
- B Is often associated with alcohol ingestion
- C Should be treated with naloxone
- D Commonly causes respiratory depression
- E Requires a period of observation, even if the patient is fully conscious

15 Diazepam

- A Is used in the treatment of *grand mal* convulsions
- B Is given intramuscularly in children, where venous access is difficult
- C Has a shorter half-life than temazepam
- D Is a useful anxiolytic in the treatment of acute asthma
- E May cause dependence, especially in patients with personality disorders

- CE** Tetanus toxoid confers active immunity by stimulating production of antibodies to tetanus. Most adults in the UK have been adequately immunised in childhood, although in the event of a contaminated wound occurring in a non-immunised patient, or one in whom the status is unknown, a course of three injections should be commenced (on presentation, at six weeks and at six months). The addition of Humotet (a preparation of human antibodies) is indicated to confer passive immunisation during the lag phase when antibodies are being produced in response to the tetanus toxoid. Horse antitetanus serum is no longer used because of the risk of anaphylaxis.
- ACDE** Benzodiazepine overdose is a commonly encountered problem in the A&E department. Most cases do not result in serious sequelae because of its high therapeutic ratio. However benzodiazepine drugs are often ingested in combination with others, such as aspirin or paracetamol. Blood must therefore be taken if there is any doubt as to what has been ingested, or where depression of consciousness makes the history unreliable. Naloxone is used in opiate overdose.
- ABE** Benzodiazepines may be used for the short-term relief of severe anxiety. They should not be used for depressive, phobic, psychotic, or obsessional states. Long-term use should be avoided, since dependence may occur, particularly in patients with personality disorders or in alcoholics. They have been described as minor tranquillisers, although they are not related to the major tranquillisers such as the phenothiazines.
- BE** Diazepam, alprazolam and chlordiazepoxide are longer acting than temazepam or lorazepam. They can be used to induce sleep or to control panic attacks. Benzodiazepines are also useful in the A&E department as an adjunct to alcohol withdrawal, or for relief of muscle spasm, especially in acute torticollis or after acute neck sprain (whiplash injury).
In the child, diazepam is well absorbed rectally (5 mg if under three years; 10 mg if over three years), and is the treatment of choice in the uncontrolled epileptic, or in the management of febrile convulsions. Intramuscular diazepam is absorbed very unreliably and should be avoided.
- AE** Benzodiazepines are contraindicated in acute asthma or acute pulmonary insufficiency, as they can cause respiratory depression, although this is not a commonly encountered problem in the A&E department.

16 Ingestion of corrosives should be treated with

- A Gastric lavage, except in the elderly
- B Oral ipecacuanha, especially in children
- C Large volumes of milk or water, taken orally
- D Fullers' earth
- E Dimercaprol

17 Naloxone

- A Has a narrow therapeutic index
- B May need to be given in multiple doses, or by constant infusion
- C Binds to opiate receptor sites
- D Should be considered in unconscious patients where the diagnosis is unclear
- E Is contraindicated after alcohol ingestion

18 Glue sniffing may cause

- A Ataxia
- B Irreversible encephalopathy
- C Thrombocytopenia
- D Cyanosis
- E Premature ventricular contractions (PVC)

- C** Corrosive ingestion is treated with large volumes of water, or milk, orally. Both gastric lavage and the administration of emetics, such as ipecacuanha, are contraindicated, since these procedures may cause further damage to the oesophagus, or lead to inhalation of vomitus and a severe pneumonitis.
- Fullers' earth is the treatment for paraquat poisoning. Dimercaprol acts by chelation of metal ions, and is used in the treatment of metal poisoning, such as lead or copper.
- BCD** Naloxone (Narcan) is a highly effective antidote to opiate overdose. It works by competitively binding to opiate receptor sites, and provides almost immediate reversal of the signs of overdose. It has a relatively wide therapeutic ratio; thus initial doses may be repeated until the required effect is produced. Indeed, it is a common mistake to expect the initial dose of naloxone to achieve a permanent reversal of opiate, and the patient should be closely monitored despite an apparent return to normality in case further treatment is necessary. An infusion of the drug may be required.
- Naloxone is sometimes used as a diagnostic tool in the unconscious patient, where the diagnosis is unclear. It is useful as an antidote to a wide range of narcotics, including dextropropoxyphene (present in Distalgesic).
- ABCDE** Solvent abuse, or glue sniffing, is an increasingly common phenomenon, especially in teenagers, and presents to the A&E department with a variety of signs and symptoms. Most commonly, the effects are those of central nervous system (CNS) changes, such as euphoria, ataxia and nausea. In the later stages, fitting and coma may occur.
- Management in the A&E department includes the administration of 100% oxygen by mask, and close cardiac monitoring, since respiratory depression and cardiac arrhythmias may occur. Blood should be taken for blood count, electrolytes and platelets, since chronic inhalation can lead to bone marrow suppression and thrombocytopenia. The patient should be referred to the on-call medical team for further monitoring and follow-up. Psychiatric support may be indicated.

19 Pethidine differs from morphine in that

- A The pupils do not constrict as much with pethidine
- B The duration of action is shorter
- C It should not be given intramuscularly
- D It does not cause vomiting as often as morphine
- E It causes as much respiratory depression as morphine in equianalgesic doses

20 Heroin (diamorphine)

- A Is a semisynthetic drug
- B Is highly addictive
- C Is converted to codeine in the body
- D Is antagonised by naloxone
- E Was initially used as a cure for morphine addiction

21 Frusemide

- A Is structurally related to the thiazide diuretics
- B Acts in the ascending loop of Henle
- C Causes diuresis for about 6 h
- D Is mainly metabolised in the liver
- E Can cause gout, pancreatitis and deafness

22 Phenothiazines

- A Cause excessive salivation
- B May cause Parkinsonian-like effects
- C Can cause oculogyric crises
- D Are commonly used in the treatment of schizophrenia
- E Include chlormethiazole (Heminevrin)

23 Beta blockers

- A Are used in the treatment of hypertension, angina, anxiety, migraine and glaucoma
- B Both reduce the heart rate and increase force of contraction
- C If stopped suddenly, may precipitate myocardial infarction in patients suffering from angina
- D May be given in combination with diuretics
- E Are respiratory depressants and therefore should be avoided in the asthmatic patient

ABE Heroin was first made from morphine at St Mary's Hospital in 1874. It was initially used for the purpose of 'curing' patients of their morphine addiction!

Surprisingly, pethidine is structurally very different from morphine, although it shares many of the side-effects of nausea, vomiting and respiratory depression. The actions of both are reversed by naloxone.

Heroin is a most potent narcotic analgesic and is converted to morphine in the body. Naloxone (Narcan) is a competitive antagonist and is therefore useful in heroin overdose.

ABDE

ABCE Frusemide is a so-called loop diuretic, inhibiting resorption from the ascending loop of Henle in the renal tubule. Oral administration becomes effective within 1 h, and the diuretic action lasts 6 h (hence the name, Lasix). Given intravenously, frusemide acts rapidly, the peak effect occurring within 30 min. It is little metabolised and is excreted mainly in urine and faeces. Very large doses may have to be given in renal failure.

Complications of therapy include hypokalaemia, hypotension, urinary retention in the presence of an enlarged prostate, rashes, tinnitus and deafness.

BCD This group of drugs, which include chlorpromazine and trifluoperazine, are commonly used in the treatment of schizophrenia.

Signs of overdose include anticholinergic effects such as dry mouth and tachycardia as well as extrapyramidal effects, which are usually easily reversed with anticholinergic drugs such as procyclidine (Kemadrin) or orphenadrine (Disipal). It follows that drugs with more marked anticholinergic effects, such as thioridazine, are useful in schizophrenia, where Parkinsonian side-effects may be a problem. Elderly patients may fit into this category.

ACD Side-effects include tiredness, heart block, nightmares, congestive cardiac failure (because of their negative inotropic effect), Raynaud's phenomenon and claudication (and should therefore be avoided in peripheral vascular disease), impotence in males (by an unknown mechanism) and, most importantly, bronchospasm. They should not be used in the asthmatic.

ACCIDENT AND EMERGENCY

24 The following deaths are notifiable to the coroner

- A Deaths from myocardial infarction with no previous medical history available
- B Deaths from industrial disease
- C Deaths in prison
- D All deaths in children under the age of two years
- E All deaths due to injury

25 The following are usually treated by primary suture

- A Human bites
- B Lacerations to the face
- C Pretibial laceration in the elderly
- D Lacerations over the extensor surfaces of a joint
- E Infected wounds

BCE Deaths notifiable to the coroner include: those resulting from violence or injury; those due to drugs or poisons, including alcohol; those due to neglect or exposure; abortions; industrial disease; pensionable disabilities; perioperative deaths; those of unknown or uncertain cause; those occurring in prison or in police custody. The first three are particularly relevant in the A&E department.

BD All bites, especially those of humans, should be treated as potentially infected and must be treated with careful wound cleansing and dressing only. Delayed suture may then be carried out if necessary.

Lacerations to the face should be carefully sutured, with scrupulous attention to wound toilet. Special care should be taken in the vicinity of the eyes and mouth to ensure a cosmetically satisfactory result. If there is any question of the tear ducts, eye-lids, or deeper structures being involved, it is essential to obtain the opinion of an experienced ENT (ear, nose and throat), plastic, or ophthalmic surgeon.

Pretibial lacerations should not be sutured, since the blood supply to the skin in that area, already jeopardised by the laceration, is further limited by the resultant swelling. After careful wound toilet and debridement, the skin edges should be approximated as much as possible without tension and Steristrips applied. Pressure should then be applied using an elasticated tubular bandage, and strict instructions given that the leg should be kept elevated for at least 5 days, at which time the wound should be reviewed. A laceration treated in this way should heal with few complications.

Lacerations over the extensor surface of joints are in danger of poor healing unless sutured. Care must be taken to exclude joint penetration, or a residual foreign body.

An infected wound must never be sutured. It should be treated by careful wound toilet and debridement, followed by regular dressings. In some cases, delayed primary suture is indicated.

26 Avulsed teeth

- A Are best discarded
- B May be kept viable for up to 3 h by storage in milk or the patient's buccal sulcus
- C Should be licked by the patient, and immediately reimplanted and splinted in place
- D Must be scrubbed clean before reimplantation
- E May be inhaled

27 Anaphylaxis

- A May show a familial tendency
- B Is mediated by IgM antibody
- C Is characterised by urticarial rash, bronchospasm and oedema
- D May be treated with subcutaneous adrenaline
- E Only occurs on first exposure to the allergen

BCE

Avulsed teeth are commonly encountered in the A&E department. The patient has usually been involved in a fight or has suffered head injury, and may well be agitated and upset. A calm, reassuring approach is essential.

If the patient presents within half an hour of the injury, the chance of successful reimplantation is high. The tooth should ideally be licked by the patient, immediately replaced in the socket and splinted in place. If there is a delay in reimplantation, the tooth can be stored satisfactorily in milk for up to 3 h. It must not be vigorously cleaned, as this damages the root and reduces the chances of subsequent survival.

Avulsed and broken teeth can be inhaled, especially in the head-injured patient, so that it is very important to check the oropharynx visually as part of the initial assessment of the airway in the injured patient.

Always consider the possibility of a Le Fort I fracture of the maxilla if the upper incisors are loose.

ACD

Anaphylaxis is mediated by the IgE antibody. Exposure to the allergen causes destabilisation of the mast cells and histamine release. Histamine is a powerful bronchoconstrictor and vasodilator, causing the characteristic signs of rash and wheezing. This response may be after several exposures to the allergen concerned. Anaphylaxis is a medical emergency and should be managed by maintaining the airway and by the administration of subcutaneous adrenaline (0.5 ml of 1:1000). Intravenous fluids should be given in the case of circulatory collapse. Drug treatment includes intravenous antihistamine (e.g. chlorpheniramine). Intravenous hydrocortisone may also be used, but the effect is delayed.

28 In carbon monoxide poisoning

- A Headaches, nausea and confusion are common presenting complaints
- B A carboxyhaemoglobin level of 10% is pathognomonic
- C The patient should be treated with 28% oxygen
- D There may be an insidious onset lasting several days
- E There is commonly a 'cherry red' discoloration of the lips and mucous membranes

AD

Carbon monoxide is a tasteless, odourless and colourless gas, produced by incomplete combustion of organic materials. Although the mortality due to carbon monoxide poisoning has fallen since the introduction of natural gas into domestic households, approximately 1000 deaths still occur annually in England and Wales from this cause. Poisoning may occur when gas heating appliances are incorrectly fitted, or damaged, allowing an escape of waste gases into the room. Other sources of carbon monoxide are car exhaust fumes and smoke from all types of fires.

Carbon monoxide competes with oxygen for the haemoglobin molecule and has an affinity approximately 240 times that of oxygen. The symptoms and signs following inhalation of the gas are primarily the result of tissue hypoxia.

The most common presenting complaint is that of headache and nausea, which may be gradual or sudden in onset. In the later stages, the patient becomes confused and eventually loses consciousness. The cause of death may be cardiorespiratory arrest, or respiratory obstruction due to aspiration of vomit.

On examination, the patient may be agitated and confused, and there may be a characteristic 'cherry red' appearance of the mucous membranes, although this sign is not common and the absence of it by no means rules out the diagnosis.

Measurement of carboxyhaemoglobin levels is a useful indicator of the extent of the poisoning. Normal endogenous production is sufficient to maintain a resting carboxyhaemoglobin level of 1-3% in urban non-smokers, and up to 10% in heavy smokers. Up to 25% carboxyhaemoglobin levels are associated with only headache and mild exertional dyspnoea. Coma, convulsions and cardiorespiratory arrest can be expected to occur at levels of 60% or more.

Electrocardiographic monitoring is essential in those whose carboxyhaemoglobin level is above 15%. Myocardial ischaemia or infarction and arrhythmias commonly occur and may not present with typical symptoms and signs. Other gases, such as hydrogen cyanide, hydrogen sulphide and hydrogen chloride, are often produced in fires and are cellular poisons as well as being locally irritant to the airways. Therefore, the possibility of cyanide poisoning should be considered in these patients. Dicobalt edetate is a cyanide antidote.

High concentrations of oxygen should be administered, preferably by a mask and reservoir arrangement such as the Magill circuit. This ensures higher concentrations than if Ventimasks or MC masks are used. Hyperbaric oxygen therapy may be helpful. Endotracheal intubation and ventilation may be required in the unconscious patient, or if cyanide poisoning is suspected.

29 Upper airways obstruction

- A May sometimes be relieved by the Heimlich manoeuvre
- B May present as croup in infants
- C May require cricothyrotomy
- D Is often caused by peanuts in young children
- E Should not be treated in the A&E department

ABC

This is always an emergency, and must be treated immediately by the attending A&E officer. If a foreign body is suspected, a Heimlich manoeuvre should be performed; the doctor stands behind the patient, placing his arms around the patient's upper abdomen. Upward thrusts and compressions are given in order to expel any foreign material. The patient must be kept sitting upright.

Adult airway obstruction may be caused by foreign body, angioneurotic oedema, trauma, tumour, infections or irritants such as smoke, or inhaled chemicals. In children, epiglottitis is an important cause.

Peanuts are inhaled by older children, who throw them up and catch them in their mouths. These lodge in the right main bronchus and need to be removed electively via the bronchoscope.

Cricothyrotomy should be performed when simple procedures such as digital extraction and the Heimlich manoeuvre have failed. It must be performed immediately by the most experienced doctor present.

In the most urgent situation, a useful life-saving procedure is the needle cricothyrotomy. One or more wide-bore needles are inserted through the cricothyroid membrane to allow adequate gas exchange before a more definitive procedure can be performed.

30 Spontaneous pneumothorax

- A Characteristically occurs in tall, thin young men
- B Must be treated with a chest drain
- C May be due to a ruptured bullous
- D Is sometimes associated with a fractured rib
- E May present with chest pain

31 Tension pneumothorax

- A Should be diagnosed by chest radiography
- B Can be treated initially by the insertion of a wide-bore cannula into the chest
- C Is a life-threatening condition
- D Is difficult to diagnose clinically
- E Is associated with progressive deviation of the trachea to the ipsilateral side

32 Pneumothorax

- A Is associated with reduced breath sounds
- B May be treated conservatively
- C May occur after central venous catheterisation
- D Is associated with reduced percussion note
- E Can be associated with surgical emphysema

33 Scalp lacerations

- A Can cause extensive blood loss requiring transfusion
- B Are an indication for skull radiography
- C Heal slowly because of poor blood supply
- D May be treated with histo-acryl glue
- E Often lead to clinically significant infection

- ACE** Pneumothorax is the presence of air in the pleural space. It may be spontaneous (classically in young, thin people with long chests) or may occur as a result of penetrating injury from stab wounds or fractured ribs. Pneumothorax may be iatrogenic after needle puncture of the pleura during central venous cannulation.
- Tension pneumothorax occurs when the entry wound acts as a one-way valve, allowing air into the pleural space, but preventing it escaping. The patient presents in severe respiratory distress, possibly cyanotic, with a hyperresonant chest. Chest movement on the affected side is markedly reduced and the trachea is deviated to the contralateral side. The neck veins may be dilated and breath sounds absent.
- BC** Treatment is by immediate insertion of a needle, or intravenous cannula, through the chest wall into the pleural space. The needle or cannula must be left *in situ* and formal insertion of a chest drain performed.
- ABCE** Surgical (or subcutaneous) emphysema is the presence of air in the subcutaneous tissues, and is associated with pneumothorax. Clinically, there is palpable crepitus of the skin in the affected area, and pockets of air appear as radiolucent areas on X-ray in the axilla or in the neck.
- Small pneumothoraces may be treated conservatively, as these often reinflate spontaneously. Larger pneumothoraces may be treated by insertion of a chest drain, with underwater seal, or by aspiration using a simple intravenous cannula connected to a large syringe by means of a three-way tap. While technically simple and atraumatic for the patient, aspiration may be unsuccessful and have to be followed by chest drain insertion to maintain full inflation of the lung.
- Pneumothorax may occur during intermittent positive pressure ventilation, so that a check radiograph is essential following successful resuscitation requiring artificial ventilation.
- AD** Scalp lacerations are sometimes overlooked and can cause significant haemorrhage, leading to hypovolaemic shock and requiring transfusion. They require thorough wound toilet before closure, antitetanus prophylaxis if indicated and careful closure in layers.
- The decision to perform skull radiography will depend on the severity of the injury. Not every laceration will require skull radiography. The blood supply to the scalp is extremely good, so that these injuries usually heal well without infection.
- In children, histo-acryl glue is a more acceptable form of treatment than sutures, and produces good results. Great care must be taken not to apply the glue into the wound itself, as significant amounts of heat may be produced by the chemical reaction, causing tissue damage. The glue should not be used for lacerations near the eyes, or for extensive or actively bleeding wounds. These should be sutured.

34 A patient with a suspected paracetamol overdose

- A Should have serum paracetamol levels estimated at least 4 h after ingestion
- B May die if he has taken more than 10 g (or twenty 500 mg tablets)
- C May be treated with intravenous *N*-acetylcysteine or oral methionine
- D Is likely to complain of tinnitus
- E May suffer delayed irreversible liver failure

35 Paronychia

- A Is an infection of the nail fold and surrounding tissue
- B May require incision and drainage
- C Is usually a streptococcal infection
- D May become chronic
- E May be fungal

36 The following are true of a Bier's block

- A The cuff should be inflated to 100 mmHg over diastolic pressure
- B Anaesthesia takes 10 min post-injection to develop fully
- C It is safe to remove the cuff 20 min after prilocaine injection
- D Resuscitation equipment should be readily available
- E Systemic venous access is necessary during the procedure, to measure prilocaine levels

ABCE Paracetamol levels should be taken at least 4 h after ingestion. This is to allow time for absorption to be completed. Treatment with intravenous *N*-acetylcysteine or oral methionine should be commenced promptly once the serum levels are known, or before if there is a reliable history of ingestion of more than 10 g of paracetamol. These drugs replenish hepatic stores of glutathione and protect against liver damage. The signs of fulminant hepatic failure may not be evident before five to seven days.

Tinnitus occurs in aspirin overdose.

ABDE Paronychia is an infection of the nail fold and surrounding tissues, often in nail-biters. It is usually a staphylococcal infection. It should be treated by incision over the point of maximum fluctuance and the pus collection drained. Antibiotics may be useful. Fungal infections can cause paronychias that are extremely difficult to treat and may require long-term systemic antifungal agents.

BCD Bier's block is a technique used for regional anaesthesia, usually of the arm, for fractures of the forearm and wrist. After elevating the arm for a short time to exsanguinate it as much as possible, an inflatable cuff is blown up around the upper arm to about 100 mmHg above the systolic blood pressure. Local anaesthetic agents, such as prilocaine, are injected intravenously distal to the cuff. Complete anaesthesia of the arm will take at least 10 min. Full resuscitative equipment must be available during the procedure, since accidental leak of the cuff may cause escape of cardioactive anaesthetic agents into the circulation, with the potential of serious cardiac arrhythmias. Intravenous access should always be ensured on the other arm so that resuscitative drugs may be given.

37 Legally

- A A 17-year-old patient cannot give his own consent for an operation
- B The fact that a patient has attended the A&E department is confidential
- C An operation or procedure on a child cannot be carried out without the consent of the parent or guardian
- D The coroner must be informed of all deaths as a result of road traffic accidents
- E Attendance at an A&E department implies consent to physical examination

MEDICINE

38 Bell's palsy

- A Is a lesion of the trigeminal nerve
- B Is an upper motor neurone lesion
- C May respond to steroid treatment
- D Is associated with pain behind the ear
- E Is associated with the inability to raise the eyebrows on the affected side

39 Bell's palsy

- A Is an upper motor neurone lesion of the VII nerve
- B May be associated with sarcoidosis
- C Is more common in diabetics
- D May be associated with permanent facial weakness
- E May be associated with corneal ulceration

BDE The Family Law Reform Act 1969 states that a patient can give informed consent for treatment at the age of 16. Younger than this, the consent of the child's parent or guardian is required. However, in the event of an emergency, the doctor, acting in good faith, may overlook this requirement.

The fact that a patient has attended the A&E department is confidential, and should not be divulged without the patient's consent. However, there may be situations where it is in the public interest to give this information to the police in order to prevent further injury or death.

The coroner must be informed of all deaths that are unexpected in people who have not seen a doctor within the preceding 72 h.

Physical examination of a patient cannot be construed as an assault, since consent has been implied by the patient when he presented to the department.

Other reasons for informing the coroner include (among others): deaths involving drugs or poisons; industrial accidents or illness; recent operation; infancy; and death while under police custody.

CDE This condition is related to a lesion of the VII nerve in the facial canal. Because it is a lower motor neurone lesion, there is weakness and loss of tone in both the upper and the lower halves of the face. This differs from an upper motor neurone lesion (e.g. a cerebrovascular accident), where the forehead is not affected as it is innervated from both cerebral hemispheres.

There is loss of tone of the facial musculature, the face sags, there may be dysarthria, and paralysis of the orbicularis oculi muscle renders voluntary closure of the eye impossible. This leads to damage to the surface of the eye, and should be treated by taping the eye closed until recovery.

BCDE

Most cases will recover clinically within a few weeks, and therefore treatment is aimed at reassurance of the patient and the prevention of eye damage. Steroids are used in some centres. Surgical decompression has been suggested, although it is difficult to justify when the majority recover spontaneously.

40 Classical features of left ventricular failure on chest X-ray include

- A A mediastinal shift
- B Dilated pulmonary veins
- C A reduced heart size
- D Scattered miliary opacities
- E Aortic calcification

41 In Reiter's disease

- A There may be the classical triad of urethritis, polyarthritis and conjunctivitis
- B There is an association with gene marker HLA-B7
- C X-ray changes are helpful in the acute phase
- D *Chlamydia* is a commonly associated organism
- E There may be a recent history of diarrhoea

42 In subarachnoid haemorrhage

- A Bleeding is from Berry aneurysms in about 20% of cases
- B The patient complains of gradual onset of severe occipital pain
- C No cause is found in about 20% of cases
- D Focal neurology is absent
- E A computerised tomography (CT) scan may be helpful

- B** Left ventricular failure is commonly associated with hypertension and therefore cardiomegaly. The pulmonary veins are dilated and there is pulmonary plethora evident. There may be unilateral or bilateral pleural effusions.
- ADE** The classical triad of symptoms do not always occur. Characteristically, a chlamydial urethritis or diarrhoea associated with *Salmonella* or *Shigella* precedes the condition. It is more common in patients with HLA-B27 genetic marker.
Although it can occasionally lead to a destructive arthritis, the changes are late. Calcaneal spur formation is an associated feature.
- CE** Subarachnoid haemorrhage occurs from a Berry aneurysm in almost 65% of cases. The patient may feel he has been 'hit in the back of the head' and presents with nausea, vomiting, or loss of consciousness. Focal signs may occur as a result of vascular spasm or direct extension into the brain.
A negative CT scan may necessitate lumbar puncture if clinical suspicion is high, or if there has been an interval of several days since the onset of symptoms. Xanthochromia in the supernatant signifies a positive result. Blood may take up to 24 h to appear in the cerebrospinal fluid.

43 In patients with signs of cerebrovascular disease

- A Lesions primarily involve the arteries
- B Migraine must be considered in the differential diagnosis
- C Auscultation of the neck is indicated
- D Transient ischaemic attacks (TIAs) must be treated promptly
- E Aspirin reduces incidence of non-fatal cerebrovascular accident

44 Pulmonary embolus

- A May result in a raised diaphragm on chest X-ray
- B May cause a reduced arterial pO_2
- C May cause prominent 'a' waves in the jugular venous pulse
- D May give rise to pulmonary hypertension
- E Is a recognised complication of long-bone fractures

45 Characteristic electrocardiographic changes in pulmonary embolus include

- A Prominent S wave in lead I, T wave inversion and the presence of a Q wave in lead III
- B The changes consistent with right bundle branch block
- C Prolonged Q-T interval in the right chest leads
- D Left axis deviation
- E Atrial fibrillation

ABCDE Atherosclerosis is primarily a disease of the arteries, involving progressive degeneration of the arterial wall. Migraine can cause vasoconstriction, occlusion and cerebral infarction, leading to both motor and sensory loss, or even hemianopia. A history of headaches, or family history of migraine, often points to the diagnosis.

Auscultation of the neck may reveal carotid bruits, indicating atherosclerosis of these arteries. This may cause platelet aggregation and subsequent embolus. Endarterectomy may provide useful improvement in such patients. Aspirin reduces the adherence of platelets and is used in low doses in the treatment of transient ischaemic attacks. The addition of Persantin (another antiplatelet drug) has not been shown to be of benefit.

ABCDE The patient with pulmonary embolus may present with tachycardia, pleuritic pain, shortness of breath, or even haemoptysis. There may be a recent history of prolonged aircraft flights or bus trips, or the patient may be bed-ridden, thus increasing the risk of deep vein thrombosis and subsequent pulmonary embolus.

Recent fracture may be complicated by fat embolus to the lung. This condition gives rise to a diffuse gas transfer defect, compared with the more focal defect of a pulmonary embolus. Interestingly, the mechanism for this phenomenon is not fully understood.

AB Investigation should include arterial blood-gas estimation to detect a drop in p_aO_2 , and chest radiography, which may demonstrate the characteristic wedge-shaped opacity in the peripheral lung field, although it commonly appears normal. Electrocardiographic changes include a prominent S wave in lead I, and the presence of both a Q wave and T wave inversion in lead III (the so-called 'S1, Q3, T3' pattern). There may be right axis deviation.

A combined ventilation and perfusion scan may demonstrate reduced perfusion in the affected area. The most reliable (but rarely performed) diagnostic test is pulmonary arteriography, showing incomplete or reduced filling of the pulmonary vasculature.

Immediate treatment in the A&E department includes the administration of oxygen by mask, and referral to the duty medical team for heparinisation. Streptokinase may be used for large emboli.

46 Hypoglycaemia

- A May be associated with hypothermia
- B May be associated with diplopia
- C Is caused by thyrotoxicosis
- D Is caused by depression
- E May be treated with glucagon intramuscularly

47 Hypoglycaemia

- A May be precipitated by alcohol
- B May present with acute confusion as the only sign
- C Characteristically presents with acidosis and dehydration
- D May occur after gastrectomy
- E Always requires admission

48 Hypoglycaemia

- A Is associated with 'Kussmaul breathing'
- B May cause fitting
- C Must be excluded in any patient with altered consciousness
- D May be treated with 50% dextrose given intravenously
- E Is associated with sweating

49 Diabetic ketoacidosis

- A May be associated with recent infection or illness
- B Causes rapid, shallow respiration
- C May be associated with a high serum potassium initially
- D Is associated with total body deficit of potassium
- E Is best treated with 5% dextrose

50 Diabetic ketoacidosis

- A Is caused by an overdose of insulin
- B Is associated with a raised serum bicarbonate level
- C May be associated with severe dehydration
- D Is treated with continuous insulin infusion
- E May be associated with cardiac arrhythmias

- ABE** The signs of hypoglycaemia include agitation, sweating and pallor, and are usually quite distinct from the deep, slow respiration of the dehydrated, ketoacidotic patient. It is often caused by inappropriate insulin or oral hypoglycaemic agent therapy, but may also be caused by alcohol consumption, dietary omission and many other causes.
- Treatment is by rapid infusion of 50 ml of 50% dextrose intravenously. Consciousness is regained within a minute or two. Alternatively, should venous access be difficult, one unit of glucagon may be administered intramuscularly. If the diagnosis is in doubt, a capillary blood sample should be taken and tested for sugar. This investigation is routine in any unconscious patient.
- ABD**
- In the hyperglycaemic ketoacidotic patient, the principles of treatment are rehydration and correction of blood sugar levels while maintaining stable electrolytes. Rehydration is by normal saline (0.9%) given at a rate of 1-1.5 litres in the first hour, followed by the same amount every 2 h. A central venous pressure line (CVP) is important to monitor fluid replacement, and is of particular importance in the elderly and the very young.
- BCDE**
- Soluble insulin is best delivered intravenously at a rate of between five and seven units per hour, while monitoring the blood sugar and serum potassium levels. A loading dose of 10 units may be administered intramuscularly.
- ACD**
- Initial serum potassium level may be normal or high (owing to the acidosis causing an extracellular shift), although the total body potassium is actually normal or low. Rehydration and insulin therapy may therefore cause the serum potassium to fall below normal, with the risk of cardiac arrhythmias. Therefore, potassium should be added to the infusion fluids and delivered at a rate of 10-20 mmol per hour.
- CDE**

51 In the patient with severe asthma

- A The patient is often very anxious and may need sedating
- B The worse the wheeze, the worse the asthma
- C The arterial $p\text{CO}_2$ may be normal
- D Venous access is advisable
- E Nebulised alpha agonists are the treatment of choice

52 Asthma

- A Causes 1500 deaths per year in England and Wales
- B Attacks are more common in the afternoon
- C May be misdiagnosed as chest infection in children
- D May be complicated by pneumomediastinum
- E Must not be treated with high concentrations of oxygen because of the danger of causing respiratory depression

53 Signs of severe asthma include

- A Cyanosis
- B An arterial $p\text{CO}_2$ of 50 mmHg
- C Pulsus paradoxus of more than 25 mmHg
- D Peak expiratory flow rate of 300 litres per minute
- E A silent chest

54 In the management of acute asthma

- A Ventolin nebulisers should be driven by oxygen
- B Intravenous hydrocortisone may cause clinical improvement within the first few minutes
- C Chest radiography is essential
- D Inhaled corticosteroid should be administered
- E Salbutamol and terbutaline may be administered subcutaneously

55 In the management of acute asthma

- A Ipratropium bromide (Atrovent) has maximum effect between 60 and 90 min
- B Theophyllines have a narrow therapeutic index
- C Aminophylline clearance is reduced by cimetidine and erythromycin
- D Blood-gas estimation is unnecessary if the peak expiratory flow rate (PEFR) is more than 100 litres per minute
- E The administration of 0.5 ml of 1:1000 subcutaneous adrenaline may be useful in the refractory case

- CD** Asthma may be fatal. It is therefore of vital importance that the emergency physician recognises the signs of a severe, or deteriorating condition, and is familiar with its management.
- Initial assessment of asthma is by thorough examination of the respiratory system, and must include the peak expiratory flow rate (PEFR), so that clinical improvement after treatment may be objectively measured.
- ACD** Signs of severe asthma include cyanosis, use of accessory muscles of respiration, difficulty in talking, silent chest, exaggerated pulsus paradoxus, a low PEFR and a raised arterial $p\text{CO}_2$. Indeed, the mild to moderate asthmatic often has a low $p\text{CO}_2$ because of associated hyperventilation, and therefore a normal $p\text{CO}_2$ is an important sign of more serious disease.
- Pulsus paradoxus is an exaggeration of the normal physiological drop of blood pressure on inspiration. In the severe asthmatic, the intrathoracic pressure is reduced further than normal owing to the inspiratory efforts made against the respiratory obstruction. Arterial pressure fluctuations are therefore exaggerated.
- ABCE** The incidence of asthma increases at night and in the early morning ('morning dippers'). Oxygen may be used in high concentrations in the severe asthmatic since there is little danger of respiratory depression by suppression of hypoxic drive, as there may be in the patient with chronic obstructive airways disease.
- The initial treatment is by beta agonists such as salbutamol, with or without an anticholinergic agent (e.g. ipratropium bromide) delivered by nebuliser. Beta-1 agonists cause vasodilation of the pulmonary arteries and therefore an increase in the ventilation/perfusion mismatch that already exists in asthmatic attacks. Nebulised Ventolin must be driven with oxygen unless contraindicated because of chronic pulmonary insufficiency.
- ADE** In the more severe asthmatic, intravenous access must be established and the patient treated with a bolus dose of hydrocortisone (4 mg/kg) followed by slow infusion of aminophylline (5 mg/kg). If the patient is already taking oral xanthine preparations, the dose must be halved and plasma concentration must be carefully monitored once the patient has been admitted, as serious side-effects such as convulsions and arrhythmias can occur before the appearance of other symptoms of toxicity. Aminophylline clearance is reduced in patients with congestive cardiac failure, or those taking coumarins or benzodiazepines. Intravenous salbutamol or terbutaline may be used as an alternative to aminophylline.
- ABCE** Intravenous corticosteroids are not effective until at least 6 h after administration. Increasing the dosage above 4 mg/kg will not improve their effectiveness. In the asthmatic who responds rapidly to treatment with nebulised beta adrenergic agonists and anticholinergic drugs, and when there are no other clinical signs of chest pathology, chest radiography is not essential. If the

56 In acute myocardial infarction

- A Intravenous opiates are often used as both an analgesic and an anxiolytic
- B Arrhythmias are more likely in anterior than in inferior infarctions
- C 20% of patients have a normal electrocardiogram on initial examination
- D Raised S-T segments are the commonest initial abnormality
- E Absence of Q waves on electrocardiography makes the diagnosis unlikely

57 Electrocardiographic changes characteristic of acute myocardial infarction include

- A Peaked T wave
- B Depressed S-T segment
- C Prolonged P-R interval
- D Atrial fibrillation
- E S-T elevation

58 In the interpretation of the electrocardiogram

- A Racial origin of the patient may be important
- B Mobitz type II and the Wenkebach phenomenon are examples of first-degree heart block
- C Widening of the QRS complexes occurs in bundle branch block
- D In atrial flutter, a ventricular rate of 150 per minute and an atrial rate of 300 per minute indicate a 2:1 block
- E The QRS complexes tend to be taller in ventricular tachycardia than in supraventricular tachycardia

59 The following statements are true

- A Peaked T waves are associated with hyperkalaemia
- B Absence of P waves is consistent with nodal rhythm
- C The QRS complexes are usually wider in supraventricular tachycardia than in ventricular tachycardia
- D The P-R interval is prolonged in atrial fibrillation
- E Predominantly positive deflection in lead I, and negative deflection in leads II and III, suggest right axis deviation

response is poor, chest radiography is essential to exclude collapse, consolidation, or pneumothorax.

A favourable response to salbutamol does not necessarily confirm the diagnosis of acute asthma. Mild acute left ventricular failure may respond to salbutamol and may relapse once the therapeutic effect has worn off. Close monitoring is essential.

ACD Mobitz type II and the Wenkebach phenomenon are examples of second-degree heart block. The QRS complexes of ventricular tachycardia (VT) tend to be wider than those of supraventricular tachycardia (SVT).

Peaked T waves are consistent with a diagnosis of hyperkalaemia. The QRS complexes are wider and more bizarre in ventricular tachycardia than in supraventricular tachycardia. Absent P waves are associated with both nodal rhythm and (more likely) atrial fibrillation. Right axis deviation is associated with a predominantly negative deflection in lead I, with positive deflections in leads II and III.

E Arrhythmias are more likely to occur after an inferior infarct because of the proximity of the conducting tissue to the ischaemic area. Therefore, if arrhythmia should occur after an anterior infarct, the damaged area can be assumed to be more extensive.

The earliest ECG change is a raised S-T segment, although a normal ECG by no means rules out the possibility of infarction. A Q wave generally appears only after 24 h following an infarction, so that, in the acute case, the absence of Q

ACD waves is to be expected.

AB

60 The following statements are true of arterial blood gases

- A A pO_2 of 14 kPa and pCO_2 of 4 kPa are compatible with hyperventilation
- B A bicarbonate level of 15 mmol/litre is compatible with diabetic ketoacidosis
- C The oxygen saturation of haemoglobin may be measured by pulse oximetry
- D Morphine overdose causes a respiratory acidosis
- E The pO_2 of arterial blood drops by about 6-7 kPa as it passes through the tissues

61 Aspirin overdose

- A Is associated with tinnitus
- B Causes a respiratory acidosis
- C May be treated with intravenous N-acetylcysteine
- D Should not be treated with gastric lavage if over 12 h since ingestion
- E May cause gastric bleeding

62 The following may be associated with altered sensation

- A Migraine
- B Multiple sclerosis
- C Hyperventilation
- D Diabetes
- E Fractured fibula

ABCDE Diabetic ketoacidosis is associated with a metabolic acidosis, and therefore a lowered bicarbonate level is expected. Morphine overdose, on the other hand, causes respiratory depression, leading to respiratory acidosis and eventually to a raised bicarbonate level.

The partial pressure of oxygen in arterial blood is 12-14 kPa, compared with 4.5-6.0 kPa in venous blood.

Oxygen saturation of haemoglobin may be measured easily and rapidly in the A&E department by oximetry. This instrument depends on differences in light refraction between oxygenated and deoxygenated blood which are commonly measured via a finger probe. The relationship between oxygen saturation of haemoglobin and partial pressure of oxygen conforms to the standard oxygen dissociation curve. The pulse oximeter may become inaccurate in carbon monoxide poisoning or where there is peripheral vasoconstriction (e.g. in shock or hypothermia). Despite this, it is a useful tool in the resuscitation room.

AE Aspirin overdose is associated with tinnitus and metabolic acidosis. Blood should be taken for salicylate levels and gastric lavage performed. This procedure should be carried out if clinically indicated no matter how long after the overdose the patient presents. *N*-Acetylcysteine and methionine are used after paracetamol overdose.

Migraine is associated with facial tingling and numbness.

Multiple sclerosis and diabetes may cause loss of sensation due to lesions of the central and peripheral nervous systems, respectively. Hyperventilation causes a respiratory alkalosis, with resultant peripheral tingling, carpal spasm and circumoral numbness.

ABCDE Diabetes is associated with a peripheral neuropathy, and fractured neck of the fibula may involve the common peroneal nerve, causing foot drop and loss of sensation to the lateral side of the leg and foot.

63 Transient ischaemic attacks (TIAs)

- A Are commonly caused by platelet embolism
- B May result in permanent disability
- C May be associated with amaurosis fugax
- D May be followed by a complete stroke
- E May be treated with carotid endarterectomy

64 Concerning transient ischaemic attacks (TIAs)

- A They may present with focal sensory disturbance
- B One in four patients with a carotid bruit will suffer a TIA within five years
- C Dipyridamole (Persantin) significantly reduces the risk of stroke following TIA
- D Carotid endarterectomy may be indicated
- E The diagnosis is usually made on arteriography

65 Transient ischaemic attacks (TIAs) may be associated with

- A Dysphasia
- B Focal weakness
- C Visual disturbance
- D Preceding aura
- E Carotid bruits

66 Recognised complications of blood transfusion include

- A Renal failure due to tubular necrosis
- B Pyrogen reaction due to the presence of antibodies to transfused leucocytes and platelets
- C Bronchospasm
- D Congestive cardiac failure
- E Symptoms of hypocalcaemia

67 Blood transfusion can transmit the following conditions

- A Malaria
- B Syphilis
- C Brucellosis
- D Hepatitis A, B or C
- E Autoimmune deficiency syndrome (AIDS)

ACDE Transient ischaemic attacks (or TIAs) are associated with dysphasia, focal weakness, or sensory disturbance in the presence of carotid artery atheroma. They may also be caused by intracerebral vessel occlusion in the presence of normal carotid arteries.

TIAs may be caused by platelet embolism from an ulcerated atheromatous plaque, leading to localised areas of cerebral ischaemia. Symptoms last anything from a matter of seconds to a few hours, and are followed by complete recovery within 24 h.

ABD

The patient may present with the consequences of a fall as a result of the TIA, e.g. head injury or limb fracture, so that all elderly patients presenting to the A&E department after a fall should be given a full neurological and cardiological examination, including electrocardiogram. The patient should then be referred to the on-call medical team for further management if a TIA is suspected.

ABCDE

ABCDE Blood transfusion can lead to a number of serious sequelae, including acute haemolysis associated with ABO incompatibility. This causes haemoglobinaemia, jaundice and acute renal failure owing to tubular necrosis. Hypotension and circulatory shock contribute to the renal lesion.

Other complications include: the pyrogen reaction relating to antibodies resulting from transfused leucocytes and platelets; allergic reactions leading to urticaria and bronchospasm; circulatory overload, especially in the elderly; iron overload; thrombophlebitis; and symptoms of hypocalcaemia due to an excess of citrate following multiple transfusions.

ABCDE

Transmission of infectious disease is possible. Those described include malaria, syphilis, brucellosis, hepatitis, cytomegalovirus and AIDS. In those countries where malaria is endemic, blood transfusions are often accompanied by the administration of antimalarial prophylaxis.

68 Supraventricular tachycardia

- A May be provoked by coffee, alcohol or stress
- B May recur
- C May respond to direct pressure on the eyeball
- D Is characterised by grossly widened QRS complexes
- E May be treated with D.C. cardioversion

69 Ventricular tachycardia

- A Is caused by an abnormal focus of excitation within the ventricular myocardium
- B Is associated with widened QRS complexes
- C Is treated with verapamil 5 mg given intravenously in the first instance
- D Usually responds to carotid sinus massage
- E May be treated with D.C. shock

70 Ventricular tachycardia (VT) may be treated by

- A Lignocaine
- B Verapamil
- C Amiodarone
- D Carotid sinus pressure
- E Practolol

ABCE It is sometimes difficult to differentiate between supra-ventricular tachycardia (SVT) and ventricular tachycardia (VT). Supraventricular tachycardia is characterised by a heart rate of less than 250 per minute originating above the level of the ventricles (atrium, atrioventricular junction, sinus node). It is commonly caused by re-entry mechanisms. The QRS complexes are narrow, and look more normal than those of VT, which tend to be wider.

ABE Both can cause symptoms, although the treatment differs. SVT may be treated by vagal stimulation initially by carotid sinus massage, eyeball pressure, or a drink of iced water. Failing this, verapamil may be given by slow intravenous injection of 5 mg aliquots, up to a maximum of 15 mg in 30 min. It must not be given in conjunction with intravenous beta blockers, and great care should be exercised if the patient is being treated with oral beta blockers or other antiarrhythmic agents. D.C. cardioversion is used as a resuscitative procedure, or in the severely symptomatic patient.

ACE Ventricular tachycardia (VT) is a serious arrhythmia, often degenerating into ventricular fibrillation. It may arise from a focus of irritability in the Purkinje fibres of the ventricle. The heart rate is usually 140-210 per minute. Widened QRS complexes in association with atrioventricular dissociation, fusion beats and capture beats are the best electrocardiographic evidence of ventricular tachycardia.

Synchronised D.C. countershock is effective in treating the majority of ventricular arrhythmias. After D.C. cardioversion, lignocaine should be given by intravenous bolus of 5-10 ml of 1% solution, followed by an intravenous infusion of 1-2 g in 500 ml of 5% dextrose at a rate of 1-2 ml per minute. Alternatively, practolol may be given (5 mg given by slow intravenous injection and repeated to a total of 20 mg). Mexiletine may be effective.

If there is doubt as to the diagnosis, the condition should be treated as if it were VT rather than SVT.

71 Hypothermia is associated with

- A Myxoedema
- B Alcoholism
- C Vagrancy
- D Overdose
- E Old age

72 Sickle cell crisis

- A Is more common in patients suffering from malaria than in healthy individuals
- B May present with the 'hand-foot' syndrome
- C May present with haematuria
- D May be treated with opiate analgesia
- E May be associated with *Salmonella* osteomyelitis

73 Sickle cell crisis is treated with

- A High concentrations of inspired oxygen
- B Regular folic acid supplements
- C Exchange transfusion in severe cases
- D Rehydration
- E Diuretics

OPHTHALMOLOGY

74 Subconjunctival haemorrhage

- A Is commonly the result of an ocular trauma
- B May be caused by coughing
- C May be associated with a skull fracture
- D Usually presents as a painful red eye
- E Usually requires hospitalisation for further management

75 Conjunctival haemorrhage

- A May lead to hyphaema if left untreated
- B Is treated with antibiotic drops
- C Is treated with bed rest
- D Often affects visual acuity
- E May occur spontaneously

ABCDE Hypothermia is a common problem in the UK in winter. It is associated with vagrancy and alcoholism (both because of the associated peripheral dilatation and because such individuals tend to spend long periods exposed to the elements while under the influence of alcohol).

Myxoedema is important to exclude as a cause of hypothermia, and drug overdose may cause unconsciousness and subsequent hypothermia.

Old age is associated with hypothermia through immobility.

BCDE Sickle cell disease is associated with an autosomal recessive condition, more common in the Middle East and African countries than in Europe. 10% of American negroes possess the sickle cell trait, while 0.2% have the disease. Malaria carriers are protected from this condition.

The presenting symptoms include bony pain, especially in the sternum and the small bones of the hands and feet - the 'hand-foot' syndrome. Other presenting features include abdominal pain, leg ulcers, haematuria (owing to renal infarcts) or osteomyelitis secondary to bony necrosis.

ABCD

Treatment in the A&E department depends on rehydration, adequate analgesia and high concentrations of inspired oxygen by mask. The patient should be referred to the haematologist.

Further management should include regular folic acid supplements (5 mg daily) to support the increased erythropoietic activity, blood transfusion to correct a haemoglobin level of less than 5 g/dl, and antibiotics to treat infective complications such as osteomyelitis. Diuretics should be avoided unless cardiac failure supervenes.

AB Subconjunctival haemorrhage is most commonly idiopathic, occurring in the middle aged or elderly. It presents as an acute onset of painless red eye. No specific treatment is indicated, and the condition will usually resolve within a few days. Other causes of subconjunctival haemorrhage include trauma (in which bony injury must be excluded), coughing (e.g. whooping cough), vascular abnormalities and blood dyscrasias, such as leukaemia.

E

76 Concerning the pupils of the eye

- A Approximately 12% of normal subjects have unequal pupils
- B Dilatation of a pupil after head injury is usually due to pressure on the parasympathetic fibres of the contralateral third (occulomotor) nerve
- C Sympathetic supply is derived from the stellate ganglion
- D Holmes-Adie pupils react to light, but not to accommodation
- E Horner's syndrome is a recognised complication of interscalene anaesthetic block

77 A dilated pupil on the left may be caused by

- A A left-sided intracranial haematoma
- B Horner's syndrome
- C A direct blow to the left eye
- D Administration of pilocarpine drops to the left eye
- E Right-sided glaucoma

78 Hyphaema is

- A Haemorrhage of the anterior cranial fossa
- B Cellulitis of the orbit
- C Blood in the anterior chamber
- D Blood in the frontal sinus
- E Inflammation of subcutaneous tissues

79 The following statements are true

- A Episcleritis is associated with gout
- B Adenovirus can cause epidemics of keratoconjunctivitis
- C Iritis is associated with maximal inflammation around the limbus
- D Painful conjunctivitis should be treated with regular topical anaesthetics
- E Snow blindness is due to radiation damage

80 Orbital cellulitis

- A May cause limitation of ocular movement
- B Requires high-dose intravenous antibiotics
- C May be caused by spread of a sinus infection
- D May cause proptosis
- E May lead to cavernous sinus thrombosis

ACE Up to 12% of normal people have clinically evident pupillary inequality. These pupils will, however, react normally to light. The efferent limb of the light reflex is via the oculomotor (III) nerve, containing sympathetic fibres derived from the stellate cervical sympathetic ganglion. Damage to these fibres leads to an ipsilateral, small pupil, ptosis, enophthalmia and ipsilateral loss of facial sweating. This is known as Horner's syndrome.

Parasympathetic fibres, derived from the Edinger-Westphal nucleus, are affected by direct pressure (e.g. intracranial haematomata), leading to ipsilateral pupillary dilatation. A Holmes-Adie (or tonic) pupil is smaller than normal and reacts better to accommodation than to light.

AC

C Hyphaema is characterised by blood in the anterior chamber of the eye. There is often a collection of blood visible through the cornea. This condition usually resolves without sequelae, and management consists of bed rest and close observation. Follow-up by an ophthalmologist is essential.

ABCE Viral conjunctivitis is a highly contagious condition and can lead to epidemics, especially in schools and institutions. Iritis is associated with maximal inflammation near the limbus, compared to conjunctivitis, where the inflammation appears more widespread.

Conjunctivitis should not be treated with regular topical anaesthetics. If pain is a problem, oral analgesia should be prescribed.

ABCDE Snow blindness is caused by prolonged exposure to reflected sunlight or ultraviolet radiation, leading to damage to the cornea. It is a painful condition, which usually resolves spontaneously within two or three days. Management is by the application of eye patches and oral analgesia.

Orbital cellulitis is associated with all the features above. It has potentially disastrous complications and must be treated vigorously in hospital using intravenous antibiotics. If in doubt as to the diagnosis, refer the patient to the on-call ophthalmology team for further assessment and treatment.

81 Diabetes is associated with

- A Sudden loss of vision
- B Vitreous haemorrhage
- C Glaucoma
- D New vessel formation
- E Retinal detachment

82 Concerning diseases of the eye

- A Orbital cellulitis is often caused by spread from an infected sinus
- B Subconjunctival haemorrhages are usually painless
- C Dendritic ulcers are nearly always caused by the Herpes virus
- D Carotid bruits are an important clinical finding in sudden onset of unilateral blindness
- E Acute glaucoma is most common in the 30 to 40-year-old age group

83 In the patient with a painful red eye

- A It is important to test the visual acuity
- B The cornea should be stained with fluorescein to exclude corneal abrasions or dendritic ulcer
- C The presence of a deep anterior chamber suggests the diagnosis of acute glaucoma
- D Keratitis is suggested by inflammation in the region of the limbus and a misty opacity of the cornea
- E 'Arc eye' should be treated with four-hourly topical anaesthetic drops to alleviate the pain

84 Causes of painful red eye include

- A Viral conjunctivitis
- B Acute glaucoma
- C Corneal foreign body
- D Acute uveitis
- E Retinal artery embolus

85 Blockage of the aqueous drainage of the eye

- A Lowers the posterior chamber pressure
- B Should be treated at the next available out-patient session
- C Is an indication for mydriatic eye drops
- D Is associated with the appearance of haloes surrounding light sources
- E Is a contraindication for the use of acetazolamide

ABDE

ABCD Orbital cellulitis is associated with limitation of ocular movement, proptosis, erythema and increased temperature over the eye. It is commonly caused by spread of a sinus infection and must be managed with admission and high-dose intravenous antibiotics.

The patient presenting with an acutely painful, unilateral red eye represents a potentially difficult problem to the A&E doctor. One or two simple guidelines should be observed, which will simplify the management and reduce the risk of missing serious pathology.

ABD A detailed history is essential in all cases and will give the diagnosis in many patients. Speed of onset is an important diagnostic clue. Examination must include inspection of the surface of the eye, followed by fluorescein staining to demonstrate lesions of the cornea. Fundoscopy is essential.

Acute glaucoma occurs most commonly in the over-60s and presents with severe unilateral pain in a red eye, blurred vision and haloes. There is a semi-dilated, non-reacting pupil, the cornea may appear hazy and the eye itself feels 'woody' hard. An ophthalmological opinion should be sought urgently.

Treatment is with miotic eye drops, such as pilocarpine, so as to relieve the blockage between iris and cornea.

ABCD Acetazolamide reduces aqueous production and therefore pressure in the anterior chamber of the eye.

D

86 Arc eye

- A Presents as a painful red eye, with marked conjunctival injection and photophobia
- B May occur in welders
- C Is the result of damage to the surface of the eye caused by high-intensity ultraviolet light
- D Should be treated with topical anaesthetics for at least 48 h
- E Should be treated with topical antibiotics

87 Corneal foreign body

- A May be associated with penetrating injury to the globe
- B Is associated with rust rings
- C Can usually be removed under topical anaesthesia with a needle
- D Usually requires topical antibiotic treatment
- E Will usually require referral to the ophthalmologist for follow-up

88 Herpes simplex infection of the eye

- A Is usually diagnosed on the history
- B Displays a characteristic appearance on fluorescein staining
- C May present with symptoms similar to conjunctivitis
- D May require topical steroid treatment in the more severe cases
- E Requires topical antibiotic treatment

- ABCE** Arc eye is most commonly caused by ultraviolet radiation from an electric arc welder (snow blindness is another example of corneal damage caused by ultraviolet radiation). It usually presents within 12 h of injury with a painful, watering, red eye and associated photophobia.
- The cornea should be stained with fluorescein after instilling local anaesthetic drops, and examined for ulceration. Antibiotic ointment and an eye pad should be applied. This condition can be very painful, and should be treated with systemic analgesia and/or sedation. The patient should be reviewed within 24h and advised to wear appropriate eye protection in future.
- ABCD** Foreign bodies in the eye may be superficial, embedded in the cornea, or penetrating. The patient presents with a painful, reddened eye. Examination must include careful inspection of the eye under optimum lighting conditions, and should include eversion of the upper lid to exclude matter trapped there. Inspection of the cornea, anterior chamber, iris, posterior chamber and retina with an ophthalmoscope is mandatory in order to identify the foreign body, particularly if there is a history of metal hammering or grinding, in which high-velocity projectiles may be involved. Deformity of the iris may occur in such cases.
- Fluorescein staining of the cornea must be carried out to exclude corneal abrasion. Lateral X-rays of the globe may demonstrate a deeply penetrating foreign body and should be carried out if the history is suggestive. In this case, referral to the ophthalmologist is mandatory.
- In most cases the foreign body will be embedded in the cornea and can be removed under topical anaesthesia (e.g. amethocaine drops) using a sterile needle. Antibiotic drops should be prescribed to prevent infection, and an eye pad applied for protection. Follow-up within a few days is advisable and any rust rings removed.
- BC** Herpes simplex infection of the eye presents as a painful red eye. On examination, the eye may appear normal, although fluorescein staining may reveal the characteristic appearance of a dendritic ulcer.
- Steroid treatment is contraindicated, as this can lead to an exacerbation of the condition, with the possibility of permanent damage. Viruses do not respond to antibiotics. Acyclovir is the treatment of choice, and the patient will require referral to the ophthalmologist.

RESUSCITATION

89 During resuscitation for cardiac arrest

- A Drugs may be effective when administered via the endotracheal tube
- B Thoracotomy and internal cardiac massage are not appropriate in the A&E department
- C Central venous cannulation should only be attempted if intravenous access has been unsuccessful elsewhere
- D External cardiac compression and ventilation must not occur simultaneously, because of the danger of pneumothorax
- E A maximum of three d.c. shocks should be given

90 In the management of cardiac arrest

- A Intravenous lignocaine is the treatment of first choice for ventricular fibrillation
- B Bicarbonate can be administered via the endotracheal tube
- C External cardiac massage should be performed at 80 beats per minute
- D Adrenaline should be used in electromechanical dissociation
- E Asystole usually carries a poor prognosis

91 In the management of the unconscious patient

- A It is important to maintain an airway
- B It is important to measure the blood glucose level
- C Pinpoint pupils may indicate aspirin overdose
- D A unilateral, dilated pupil may indicate an expanding intracranial lesion
- E The history is rarely helpful

92 The following tests should be carried out immediately in the unconscious patient

- A Blood sugar estimation
- B Blood cross-match
- C Electroencephalogram
- D Liver function tests
- E Blood-gas estimation

93 Electromechanical dissociation (EMD)

- A Is associated with tension pneumothorax
- B Is a condition in which the pulse and the electrocardiogram are not synchronous
- C Is associated with cardiac tamponade
- D Is treated with lignocaine as first choice
- E Is associated with haemorrhagic shock

A Initial management of the unconscious patient must include maintenance of the airway and assessment of respiratory and cardiovascular function (the ABC of life support - airway, breathing and circulation).

The patient must be placed in a semiprone position, and all foreign matter such as vomit, blood, or teeth removed from the oropharynx either digitally or by using a sucker. An oro- or nasopharyngeal airway may be inserted to prevent the tongue from obstructing the airway, or, in appropriate cases, a cuffed endotracheal tube is introduced, both to ventilate the patient and to prevent inhalation of vomit.

CDE Intubation and ventilation techniques as well as the skill of maintaining an airway and external cardiac compression must be second nature to all doctors working in the A&E department.

When ventilation of the lungs and cardiac compression occur simultaneously, there is an increased intrathoracic pressure and an improvement in cardiac output.

A history should be obtained from friends, relations, ambulance staff or other witnesses, which may direct management.

ABD It is essential to carry out certain baseline investigations, including a blood sugar estimation (e.g. by BM Stix testing) to rule out hypo- or hyperglycaemia, an ECG to assess myocardial function or arrhythmia, and serum electrolyte estimation to detect electrolyte disturbance, e.g. in the case of drug overdose. Blood-gas estimation is important to assess oxygenation and ventilation.

A In cardiac arrest, central venous cannulation should usually be performed, since this provides a reliable delivery of drugs to the myocardium. Central venous pressures may also be assessed, and fluid balance monitored effectively.

Some commonly used drugs, including adrenaline, atropine and isoprenaline, may be effective in cardiac arrest if given in twice the normal dosage via the endotracheal tube.

Bicarbonate must never be given in this way, as it causes severe pneumonitis.

ACE Thoracotomy and internal cardiac massage are indicated in the management of cardiac arrest due to penetrating injury of the heart or in severe haemorrhage.

Ventricular fibrillation is the commonest arrhythmia following cardiac arrest. It is treated with three d.c. shocks of 200, then 200, then 400 joules, followed by intravenous adrenaline, then lignocaine, interspersed with further shocks of 400 joules.

Should there be no response, bretylium tosylate, changing the position of the paddles and trying a different defibrillator are sometimes useful. These recommendations are based on the Resuscitation Council's guidelines.

94 Ventricular asystole should be treated by

- A Adrenaline, then atropine
- B Isoprenaline, then calcium
- C Atropine, in the first instance
- D Cardiopulmonary resuscitation
- E Early d.c. shock

95 Ventricular fibrillation

- A Is common after cardiac arrest
- B Is easily confused with supraventricular tachycardia
- C Should initially be treated with a bolus dose of lignocaine intravenously
- D Is less responsive to treatment than asystole
- E Can be treated with adrenaline intravenously

96 A fixed dilated pupil is associated with

- A Death
- B Intracranial haematoma
- C Ocular trauma
- D Pontine haemorrhage
- E Non-fatal heroin overdose

TRAUMA

97 Triage

- A Means treating the most severely injured patients first
- B Only applies to major injuries
- C Divides injured patients into three categories
- D Is the categorisation of patients depending on severity of injury and available medical resources
- E Means to divide into three parts

AD Ventricular asystole is harder to treat than ventricular fibrillation. The first-line drug is adrenaline, followed by atropine. Bicarbonate is reserved for those in whom the length of time since arrest has been substantial, or is unknown. Its benefits are questionable.

Electromechanical dissociation (EMD) is a condition characterised by electrical activity, but no cardiac output. It is treated with adrenaline initially. Causes such as haemorrhagic shock, cardiac tamponade, or tension pneumothorax must be treated. This is of particular significance in the management of injured patients.

AE Pupils fix and dilate after death, but this is by no means diagnostic! Fixed dilated pupils may be caused by intracranial lesions, or direct trauma to the globe of the eye. Pinpoint pupils may indicate pontine haemorrhage or opiate overdose.

ABC

D Triage is the sorting of patients depending on the severity of the injuries and the resources available. It does not only apply to major accidents, and is used effectively in many A&E departments every day.

In the case of major accidents, patients may be divided into four basic categories: minor injuries, severely injured, critically injured and dead.

In most situations, the first and last categories are of lesser priority than the second and third. Which of these two groups are then given priority will depend on the resources available in terms of both medical personnel and equipment. Major accident response must remain flexible and adaptable throughout and must change with the developing situation.

98 Head injury

- A May not initially be apparent
- B May be masked by alcohol
- C Is more severe the higher the Glasgow coma score
- D May cause pinpoint pupils
- E Is the commonest cause of death in trauma

99 Altered consciousness immediately after a head injury

- A Is an indication for computerised tomography scanning
- B Is usually associated with a skull fracture
- C Is an indication of the severity of the head injury
- D Is an indication for skull radiography
- E Is less significant in the elderly, since they are more susceptible to minor trauma

100 Fractured base of skull

- A Is usually seen on the lateral skull radiograph
- B Is associated with rhinorrhoea and otorrhoea
- C Should not be treated with nasogastric suction
- D May be associated with an intracranial aerocoele
- E May be diagnosed on computerised tomography scanning

101 The following are indications for skull X-ray after head injury

- A Laceration of the scalp
- B Haematoma of the scalp
- C Focal weakness
- D A drunk patient
- E Evidence of spinal injury

102 Fractures of the skull

- A Are often caused by minor injury in children
- B Are associated with 'panda eyes'
- C Must be suspected if there is bleeding from the ear
- D In children may be the result of non-accidental injury
- E Are an indication for admission

103 Intracranial haematoma

- A Is more likely in the presence of a fractured skull
- B May occur after trivial injury
- C Caused by rupture of the middle meningeal vessels is usually subdural
- D May be associated with a fixed dilated pupil on the ipsilateral side
- E May be reliably diagnosed on skull radiography

ABDE The signs of head injury may be masked in inebriate patients. Reassess these patients regularly, examining for signs of neurological deterioration. In the presence of lateralising signs, or with a deteriorating level of consciousness, the patient must be admitted for investigation.

Of those patients who die of head injury, 80% have a skull fracture. Most of these patients will have evidence of raised intracranial pressure, although this is often due to cerebral oedema, rather than intracranial haematoma, and is therefore not amenable to surgery. High concentrations of inspired oxygen must be administered and overhydration avoided to prevent secondary injury.

CD One of the first signs of intracranial haematoma, or indeed any brain injury, is an altered state of consciousness. Elderly patients may present with increasing drowsiness or confusion, with little or no history of trauma. Fractures running across the territory of the middle meningeal artery may indicate damage to these vessels and subsequent extradural haematoma.

BCDE Increased swelling from the haematoma may cause the brain to compress the outer parasympathetic fibres of the third nerve against the tentorium cerebelli, allowing sympathetic pupillary dilatation of the ipsilateral pupil. In the later stages of a developing intracranial lesion, the contralateral pupil also dilates and becomes unresponsive to light.

BCD The definitive diagnosis of intracranial haematoma is made on CT scan, and allows exact identification of the lesion so that rapid neurosurgical intervention may be accurately performed. Prognosis is variable. Definitive treatment must be carried out with minimal delay. Subdural haematoma have a generally poorer prognosis than extradural haematoma.

BCDE Fractures of the skull indicate the dimension of the injury. In combination with altered levels of consciousness, skull fractures are associated with a marked increase in the incidence of intracranial haematoma. The threshold for performing computerised tomography in these patients must be low.

ABD Bleeding from the ear (with no sign of external lacerations), haemotympanum, 'raccoon eyes' and Battle's sign (post-auricular bruising) indicate a fracture of the base of the skull and must be treated as such. Nasogastric intubation is contraindicated in these patients because of the risk of passing the tube through the defect into the cranium.

Cerebral oedema after head injury may be minimised by hyperventilation, maintaining the $p\text{CO}_2$ at around 30-35 mmHg and by the use of dehydrating agents such as mannitol given intravenously. Reducing the $p\text{CO}_2$ too far causes cerebral ischaemia and should be avoided.

104 Hypovolaemic shock

- A Is first manifest by a drop in blood pressure
- B Is associated with a widened pulse pressure
- C May cause confusion or disorientation
- D Is associated with fractures of the pelvis
- E Is never caused by head injury alone in the adult

105 Hypovolaemic shock

- A Is always associated with a lowered blood pressure
- B Is characteristically associated with a metabolic alkalosis
- C Is associated with cool peripheries
- D May occur after epistaxis
- E Commonly occurs after fracture of the pelvis

106 Shock

- A May be defined as 'a pathological condition characterised by inadequate tissue perfusion and abnormal cellular metabolism'
- B Cannot exist in the presence of warm peripheries
- C May exist in the presence of a normal blood pressure
- D Is usually caused by the psychological stress of injury
- E Is associated with increased intracellular ATP levels

107 Spinal injury

- A Can be excluded in the absence of symptoms
- B Should be treated with high inspired oxygen concentrations
- C Should be assumed in all cases of head injury
- D May cause penile erection
- E Causes tachycardia and hypotension

CDE Initial management of the injured patient should include careful examination for evidence of shock, particularly when there is obvious haemorrhage, in the case of open wounds, or where there is significant occult blood loss, as in fractures of the pelvis, ruptured abdominal organs, or haemothorax.

The first clinical signs of hypovolaemic shock include tachycardia and poor peripheral perfusion (as demonstrated by a slow capillary return). As the hypovolaemia becomes more severe, the patient becomes anxious and tachypnoeic, and pulse pressure narrows owing to generalised vasoconstriction and increased cardiac contractility with increased ejection fraction. Both effects tend to normalise blood pressure and perfusion pressures at the expense of increased cardiac work.

CDE ACTH, TSH, insulin and glucagon secretion results in the liberation of the glycogen stores and gluconeogenesis. There is an initial rise in serum fibrinogen, causing hypercoagulability.

AC At the capillary level, there is a net inflow of extracellular fluid and albumin from the interstitial spaces to the intravascular circulation. There is also decreased cortical renal blood flow and increased medullary blood flow with increased reabsorption of sodium ions and water from the filtrate.

On a cellular level, there is an alteration in cell membrane permeability and a reduction of intracellular ATP levels. Sodium pump activity diminishes, increasing intracellular sodium and causing cell swelling and further reduction in ATP levels. As oxygen supplies reduce, ATP becomes depleted, anaerobic metabolism causes lactate production and there is a progressive deterioration in cellular function. Eventually, lysosomal enzymes are activated and cells destroyed.

Compensatory mechanisms are eventually overwhelmed, blood pressure falls and confusion and coma ensue. Ultimately, cellular metabolism is unable to recover, and shock becomes irreversible.

Head injury by itself does not commonly cause shock in adults. Other causes of shock must be rigorously sought in the head-injured patient.

BCD Spinal injury can only be ruled out in the asymptomatic, fully conscious patient, with normal radiographs. In all other situations, spinal injury is assumed and the patient treated accordingly. Patients with injury to the high cervical and upper thoracic cord may have reduced sympathetic outflow between the T1 and L2 segments, with associated bradycardia and hypotension. Clinically, a patient may present with warm peripheries and a wide pulse pressure quite different from the cold peripheries and narrow pulse pressure of haemorrhagic shock. Patients whose pulse rate drops below 50 per minute should be given atropine, and inotropic support may be necessary if the blood pressure falls below 80 mmHg in the presence of adequate volume replacement.

108 Trauma. Blunt trauma to the chest can cause

- A Pneumothorax
- B Cardiac tamponade
- C Rupture of the thoracic aorta
- D Myocardial infarction
- E Arrhythmias

109 In high-velocity missile injuries

- A Tissue destruction is less than in low-velocity missile injuries
- B The wound must be explored and debrided
- C There may be few external signs of deep tissue damage
- D There is massive cavitation
- E The missile has less energy but more momentum than low-velocity missiles

110 Diagnostic peritoneal lavage

- A Can exclude splenic rupture
- B May make subsequent assessment of the abdomen more difficult
- C Can give both false positive and false negative results
- D Should be preceded by urinary catheterisation
- E Must not be performed on the unconscious patient

111 Indications for peritoneal lavage after multiple injury include

- A Equivocal signs of intra-abdominal bleeding
- B Clinical evidence of splenic rupture
- C Possible fractured pelvis
- D Unexplained hypotension
- E Intoxicated patient

ABCDE Sudden compression injuries to the chest may occur as a result of head-on road traffic accidents, in which the driver is thrown against the steering column or seat belt. This may cause severe deceleration injury to the heart and lungs, causing contusions, valvular damage, aortic rupture and acute myocardial infarction. Traumatic rupture of the thoracic aorta is associated with a widened mediastinum on chest radiography, a pleural effusion and a systolic bruit on auscultation, which may radiate to the carotid artery. Fractured ribs may puncture the lung, causing pneumothorax.

The cardiovascular system must be carefully examined, and an ECG performed in all patients who have had significant injury to the chest.

BCD These injuries are often associated with catastrophic tissue damage secondary to the enormous energy imparted (equal to half the mass of the projectile times the square of its velocity). Cavitation caused by pressure waves fracture nearby bones even in the absence of contact by the missile. The reduced pressure following the pressure wave generated within the limb sucks in dirt, clothing and other foreign material. Gangrene may ensue.

Treatment involves exposure of the whole of the missile track so that all foreign material can be removed and the wound carefully debrided to prevent the growth of anaerobes.

BCD Peritoneal lavage is performed when there is a possibility of intra-abdominal bleeding and when laparotomy is not indicated: for example, patients with decreased levels of consciousness with evidence of trauma. Fractures of the lower ribs, 'imprinting' or tyre marks over the abdomen and frank haematuria are all indications of intra-abdominal injury. The only absolute contraindication is the need for laparotomy. Relative contraindications include pregnancy, fractures of the pelvis (which may cause false positive results) and previous lower abdominal operations (which may have caused adhesions, thus increasing the risk of bowel damage). Others include morbid obesity, advanced cirrhosis and established pre-existing coagulopathy.

ADE

Computerised tomography is often used in place of peritoneal lavage in children.

Diagnostic peritoneal lavage may be carried out under direct vision using a minilaparotomy, or by using a 'blind' procedure. The open approach is probably safer. A sample of peritoneal lavage fluid should be taken and laboratory analysis performed. More than 100000 red blood cells/mm³, more than 500 white blood cells/mm³, or the presence of vegetable fibres or enteric contents indicate a positive result.

Urinary catheterisation must be carried out prior to the procedure, in order to reduce the risk of bladder damage.

112 Each of the following signs score 2 on the Glasgow coma scale

- A No gag reflex
- B Extensor response to pain
- C No eye opening
- D A respiratory rate of less than 10 per minute
- E Incomprehensible speech

113 The trauma score

- A Is calculated using the pulse rate, systolic blood pressure and respiratory rate
- B Scores anatomical injuries
- C May be used to audit management of injured patients
- D Is a reliable indicator of morbidity
- E Can be used in field triage

BE The Glasgow coma scale (GCS) depends on three parameters: eye opening (scored 1-4), speech (scored 1-5) and movement (scored 1-6). The individual scores are then added, giving a final GCS of 3-15.

<i>Eye opening</i>	
Spontaneous	4
To voice	3
To pain	2
None	1
<i>Verbal response</i>	
Orientated	5
Confused	4
Inappropriate words	3
Incomprehensible	2
None	1
<i>Motor response</i>	
Obeys commands	6
Purposeful movement	5
Withdraws to pain	4
Flexes to pain	3
Extends to pain	2
None	1
Total possible	= 3-15

CE The Glasgow coma score (GCS) is combined with the respiratory rate, systolic blood pressure, capillary refill time and respiratory expansion to form the trauma score (TS). It is therefore based on physiological changes after injury, rather than anatomical injuries themselves. More recently, capillary refill time and respiratory expansion have been omitted from the calculation, forming the revised trauma score (RTS). It is a tool for audit of the management of injured patients.

A numerically more simple form of the RTS can be used in the field for triage of injured patients - the triage revised trauma score, or t-RTS.

114 The following statements are true of major burns

- A Soot in the nostrils and oropharynx may indicate inhalational burns
- B If the percentage burn added to the age is over 100, the patient is likely to die
- C Fluid replacement is calculated as the percentage area burnt times the age of the patient, divided by 2 and given over 4 h since the burn
- D Circumferential burns threatening the blood supply to a limb should be treated by escharotomy in the A&E department
- E Oral, as well as intravenous, fluids should be given, to increase the rate of fluid intake

115 Regarding burns

- A It may be difficult to differentiate between partial and full thickness burn
- B Full thickness burns are often black or white in colour
- C Burns to the hand must be immobilised to promote healing
- D Full thickness burns are usually painful
- E Electrical burns can be associated with extensive rhabdomyolysis

116 Areas of full thickness burn

- A Are anaesthetic
- B Are often leathery in appearance
- C Heal by migration of epithelium
- D May require grafting if larger than 2 cm diameter
- E Will regrow hairs

117 In areas of partial thickness burn, there is loss of

- A Pain
- B Temperature sensation
- C Hair follicles
- D Sweat glands
- E Capillary bleeding

118 In the severely burnt patient

- A Affected areas should be covered immediately to prevent fluid loss
- B Fluid replacement is proportional to both the area burnt and the weight of the patient
- C A hoarse voice is a sign of inhalational injury
- D Endotracheal intubation is contraindicated in burns to the larynx
- E Severe oedema of the face and neck commonly occurs within the first few minutes

ABD Partial thickness burns do not completely destroy the hair follicles or sebaceous glands, both containing epithelial cells, which are able to migrate over the area of the burn, providing skin cover. These migrating islands of tissue give the burn a speckled appearance.

Full thickness burns, on the other hand, have destroyed both hair follicles and sebaceous glands, and therefore heal much more slowly by migration of epithelial tissue from the edges of the wound. The area may appear black or white in colour and is leathery in consistency. It is anaesthetic, as the nerve endings have been destroyed, and the pattern of capillary bleeding is different in that the bleeding points are more widely spaced in a full thickness burn.

ABE Clothing must be removed immediately so as to minimise time of contact of hot material, e.g. in the case of scalds. Burnt clothing should be removed as far as is possible, though not if it is adherent to the skin. The burn should be covered with dry sterile towels. Burnt hands must be kept mobile.

Hoarse voice, or soot in the nostrils and oropharynx, are indications of inhalation burns, which may be complicated by laryngeal oedema and respiratory obstruction. Early intubation should be performed, since laryngeal and facial oedema may take several hours before becoming clinically apparent, making subsequent intubation difficult.

ABCD As a rule of thumb, children with 10% burns and adults with 15% burns require admission. Adequate pain relief (e.g. pethidine 1 mg/kg) should be given by intravenous injection.

The more elderly the patient, and the greater the area involved, the less the chance of survival. If the age plus the percentage area burnt equals 100 or more, the chances of survival are small.

Approximate fluid replacement of the burned patient is commonly calculated by the Muir and Barclay formula. The first 36 h following the injury are divided into six successive periods of 4, 4, 4, 6, 6 and 12 h. The estimate of the volume of plasma (in millilitres) that should be infused by the end of the fourth hour after injury is derived from the equation:

$$\frac{\text{Total percentage area of burn} \times \text{weight in kg}}{2}$$

BC Thus for a 10-year-old child weighing 30 kg with a 30% burn, fluid replacement for the first 4 h is:

$$\frac{30 \times 30}{2} = 450 \text{ ml}$$

Normal maintenance fluid must be added.

These amounts are approximate and should be adjusted depending on the haematocrit and the clinical condition of the patient.

119 A 10-year-old child with 30% burns

- A Will need admission
- B Should be given tetanus booster routinely
- C May require opiate analgesia
- D Is at less risk than a 70-year-old with 30% burns
- E Should be given about 450 ml of plasma in addition to maintenance fluids of 50 ml dextrose saline over 4 h from time of admission

120 Blow-out fractures of the orbit are associated with

- A The tear-drop sign on radiological examination
- B Loss of sensation over the upper lip
- C Blood in the maxillary antrum
- D Diplopia on upward gaze
- E Widening of the zygomatico-frontal suture

121 Fractures of the maxilla

- A Are often caused by a direct blow to the face
- B Are associated with loss of contour of the cheekbone
- C Are associated with a fluid level in the maxillary sinus on radiological investigation
- D Are often associated with fractures of the zygomatic arch
- E Are associated with damage to the facial nerve

122 Fractures of the maxilla

- A May require surgical treatment
- B Are often painless
- C May involve the supraorbital nerve
- D May involve the lateral wall of the maxillary sinus
- E May cause weakness of the ipsilateral masseter

- ACD** Tetanus cover must always be considered after a burn injury, but a 10-year-old child is likely to be well covered.
Small areas of visible burn in the case of electrical shocks bely the extent of underlying damage, and in some cases large areas of rhabdomyolysis may have occurred between entry and exit points.
- ABCDE** These fractures are often due to direct blows to the orbit. This leads to a water-hammer effect redirecting the force down through the thin-boned floor of the orbit. Herniation of periorbital fat may then follow, resulting in the so-called 'tear-drop' appearance on X-ray. The infraorbital nerve may be damaged as it passes out of the infraorbital foramen, causing paraesthesiae over the maxilla, upper lip and gingival sulcus on the same side. Occasionally, there is tethering of the orbit, leading to restriction of upward gaze and diplopia. There are often associated fractures of the maxilla.
- ABCD** Fractures of the maxilla are often the result of a direct blow to the face from a clenched fist. Clinically, there may be an obvious flattening of the maxilla on the affected side, enophthalmos, periorbital haematoma, ocular tethering and sensory loss over the distribution of the infraorbital nerve which has been damaged as it passes through the infraorbital foramen.
All such fractures should be referred to the maxillo-facial surgeons. Emergency management is usually only required for open fractures, airway obstruction, massive bleeding or ocular damage. Definitive treatment of closed fractures may be delayed for 24-48 h.
- AD**

123 Trauma

- A Is the commonest cause of death in the first four decades of life
- B Accounts for over 14000 deaths in the UK every year
- C From penetrating injury is more common than from blunt injury
- D Can be assessed by calculating the injury severity score (ISS) on death or discharge
- E Associated with head injury is the commonest cause of death in the injured patient

124 Degloving injury to the finger

- A Commonly results from the wrenching of a ring from a finger
- B Is often an industrial accident
- C May be total
- D Is routinely treated with a skin graft
- E If total, may require amputation of the finger

125 Surgical emphysema at the root of the neck

- A Is associated with stab wounds to the chest
- B May track upwards to involve the face
- C Is associated with fracture of the larynx
- D Always accompanies pneumothorax
- E Is associated with fractured ribs

ABDE Trauma is the single commonest cause of death before the age of 40 years. It accounts for well over 14000 deaths in the UK, about a third of which are from road traffic accidents. Most deaths result from blunt injury, both in the UK and in the USA, although penetrating injury from gunshot wounds and stabbings are more common in the USA. In South Africa, this ratio is reversed.

The management of the injured patient has been the subject of much attention recently. Evidence suggests that such management is not well carried out in the UK. Expert care must be provided at the scene of the accident, the patient resuscitated and stabilised, and transported rapidly to the most appropriate centre for definitive treatment. In the USA and other countries, helicopter-equipped multidisciplinary centres have been operating for several years. The first of this kind of trauma centre in the UK is now being evaluated at The London Hospital, Whitechapel, London.

The physiological trauma score (TS) may be combined with a score based on the anatomical injury known as the injury severity score (ISS). The two values can then be plotted against each other, and the likelihood of death estimated. These scoring systems form the basis of audit necessary for the evaluation of trauma care.

ABCE Degloving injuries to the finger are often caused by catching rings on hooks, or in machinery, when jumping from a height or falling. Skin grafting is usually unsuccessful and, if the degloving is near-total, the finger will often require amputation.

ABCE Surgical emphysema is air in the soft tissues commonly as a result of traumatic rupture of the parietal pleura, by either a knife or a broken rib. It can also occur as a result of rupture of a major airway, or oesophagus, whereby air escapes into the mediastinum. The most commonly affected areas include the upper chest, shoulders, neck and face. It is not always associated with radiological evidence of pneumothorax, even when the parietal pleura has been breached, as the lung may have since re-expanded.

126 Medical antishock trousers

- A Can be used to splint lower limb fractures
- B Should be applied by inflating the abdominal section first
- C Are contraindicated in fractures of the pelvis
- D Work by increasing peripheral resistance
- E Can sometimes be applied instead of intravenous fluid replacement

MICROBIOLOGY

127 Hepatitis A

- A Is associated with food-borne outbreaks
- B Has an incubation period of four to six weeks
- C May be asymptomatic
- D Is transmitted by the oro-faecal route
- E May be associated with itching

128 Concerning hepatitis B

- A Carriers possess the Australia antigen
- B Carriers are highly infective if they are E antigen (HBeAg) positive
- C May be a sexually transmitted disease
- D It is more difficult to identify than hepatitis non A, non B
- E The vaccine can be made by genetic engineering

AD Medical antishock trousers (MAST) are used in cases of severe haemorrhagic shock as a temporary measure to improve blood supply to vital organs. The trousers are applied by inflating the legs first, followed by the abdominal section. They are removed by gradually deflating first the abdominal section, followed by the leg sections one by one, while monitoring the patient's blood pressure and pulse.

They work by tamponading the bleeding points and increasing the peripheral resistance. They may cause further bleeding above the suit, especially in penetrating thoracic trauma, as a result of the sudden increase in arterial pressure. Indiscriminate use in patients with hypovolaemic shock is contraindicated.

It must be stressed that MAST trousers are merely a temporising measure designed to buy time before definitive surgery is carried out. They are definitely not a substitute for adequate intravenous fluid replacement. They may be useful in the management of pelvic fractures and trauma to the lower limb, where they reduce haemorrhage and act as a splint.

ABCDE Hepatitis A is common in institutions. It is transmitted by the oro-faecal route. Its incubation period is four to six weeks and it may take the form of a mild flu-like illness without jaundice (the majority of patients), or may be asymptomatic. Itching may be a feature.

Hepatitis B, on the other hand, is transmitted parenterally, either from transfusions, by contamination of cuts and abrasions by infected blood, or by needle sharing in infected drug abusers. It may also be spread by sexual intercourse.

ABCE

Carriers of hepatitis B possess the surface (or Australia) antigen (HBsAg), and are more infective if they are also E antigen (HBeAg) positive. Thus it is particularly important to test for the E antigen in blood that has contaminated medical or nursing staff.

Injuries from contaminated needles where the antigen status of the patient is unknown should be treated initially by cleaning of the wound and careful debridement. An intramuscular injection of human immunoglobulin should be given within 48 h to those who are not known to be antibody positive. A course of active immunisation should also be commenced. Blood should be taken from the injured individual for antibody status.

129 Scabies

- A Is caused by *Pediculosis corporis*
- B Burrows are commonly found in the finger webs and wrists
- C Is usually asymptomatic
- D Is treated with gamma benzene hexachloride (Lindane)
- E Is transmitted by physical contact

130 Influenza infection

- A Is caused by orthomyxovirus infection
- B May be followed by secondary bacterial infection
- C Is fatal in over 20% of cases
- D Is sometimes treated with amantadine
- E Vaccination provides effective immunisation in all cases

131 Measles

- A Is commonly asymptomatic
- B Is associated with characteristic lesions on the buccal mucosa
- C Is usually not as severe as rubella
- D May be mistaken for chicken pox
- E May present with cough

132 Features of measles include

- A Conjunctivitis
- B Two to three weeks of prodromal illness
- C Petechial spots on the soft palate
- D Diarrhoea
- E A fever that increases with the appearance of the rash

- BDE** Scabies is caused by the mite *Sarcoptes scabiei*, and presents as an intensely itchy rash, usually worse at night, especially in the interdigital web spaces, on the flexor surface of the wrists, axillary folds, genitals, knees and feet. It is very rare to find scabitic burrows on the face and scalp.
- The rash takes the form of burrows or vesicles, as well as secondary lesions caused by scratching or infection.
- Diagnosis is made on history and examination, or, if in doubt, demonstration of the mite by examining scrapings from the burrows under the microscope.
- Treatment is by the application of a solution of 1% gamma benzene hexachloride to the whole body below the chin. This is showered off 12 h later. All bed linen and clothing should be laundered thoroughly and contacts treated whether they are symptomatic or not.
- ABD** Influenza is caused by the orthomyxovirus and is usually not fatal in the healthy, non-immunocompromised individual, although epidemics have caused several millions of deaths in the past. Unfortunately, immunisation with influenza vaccine is not always effective.
- Secondary infection is a well recognised complication and should be managed promptly with antibiotic therapy. However, the disease is usually self-limiting, being adequately treated with a combination of bed rest, fluids and symptomatic therapy. In severe cases, the antiviral agent amantadine has been shown to be effective, but, in the vast majority of patients, the treatment is expectant.
- BE** The characteristic features of measles include a prodromal illness of four to eight days followed by the appearance of a florid rash involving face, trunk and limbs, associated with an increasing fever. There may be a cough and conjunctivitis. Diarrhoea may be associated with involvement of Peyer's patches of the small bowel. Petechial haemorrhages of the soft palate are associated with infectious mononucleosis.
- There may be characteristic white Koplik's spots on the buccal mucosa. The child is unwell, unlike the usually mild illness of rubella.
- ADE** Treatment is, of course, supportive and includes bed rest, fluids and symptomatic treatment.

133 Autoimmune deficiency syndrome (AIDS)

- A Is now as common in the heterosexual as in the homosexual communities in the UK
- B Occurs in 10% of all needle-stick injuries in hospitals
- C May be hereditary
- D Is associated with *Pneumocystis carinii* infections of the lung
- E Has a case fatality rate of nearly 80%

134 The AIDS virus has been transmitted

- A By vaginal intercourse
- B Transplacentally
- C By intravenous infusion of saline
- D By normal daily contact with an HIV positive individual
- E To blood donors in the UK

135 The AIDS virus is inactivated by

- A The use of condoms
- B Sodium hypochlorite 1% solution
- C Heat
- D Some detergent solutions
- E Some makes of diaphragm

136 The following are in the high-risk group for AIDS in the UK

- A Haemophiliacs
- B Bisexuals
- C Lesbians
- D Low socio-economic classes
- E Male homosexuals

D The autoimmune deficiency syndrome (AIDS) is a viral illness transmitted predominantly by sexual intercourse (vaginal or anal) with an infected individual, intravenous injection of infected blood or blood products (particularly with shared needles), or transplacentally from an infected mother. The commonest method of transmission world-wide is by heterosexual intercourse. It is particularly common in sub-Saharan Africa.

AB High-risk groups in the UK include bisexuals and male homosexuals. Haemophiliacs are no longer at risk, since all factor VIII is now heat-treated.

It is highly unlikely that the virus will be transmitted from a needle-stick injury, although there have been reported cases of seroconversion thereafter.

The virus crosses the placenta with ease, causing congenital disease. Because it leads to a deficient immune system, it is associated with infections, particularly of the skin, mucous membranes and lung.

BCD

The case fatality rate to date is 100%.

Simple precautions in the A&E department include the use of rubber gloves and protective glasses whenever contact with the patient's blood is expected and a policy of not recapping needles to reduce the chance of needle-stick injuries.

BE

PAEDIATRICS

137 Non-accidental injury

- A Usually occurs between the ages of three and five
- B Is more common in boys than girls
- C Is more common in single-parent families
- D Is usually easy to diagnose
- E Must be considered in every injured child

138 The following are suggestive of non-accidental injury

- A Multiple fractures in varying stages of repair
- B Torn lingual frenulum
- C Multiple bruises to the pretibial area and knee
- D Linear bruising or grazes to the back and buttocks
- E Small, circular burns to the anterior chest

139 Acute epiglottitis

- A Is commonest in the five- to eight-year-old age group
- B Should be diagnosed by direct inspection of the larynx
- C Is associated with drooling
- D Is often caused by *Haemophilus influenzae*
- E May be treated with chloramphenicol

140 In the initial management of a child with acute epiglottitis

- A It is important to alert the anaesthetic team immediately
- B The child should be examined fully to exclude other pathology
- C An intravenous cannula must be inserted immediately
- D A lateral radiograph of the neck should be performed
- E A rectal temperature should be taken

CE Non-accidental injury (NAI) can occur at any age and within any socio-economic class, but is more common in the social classes 4 and 5, in single-parent families and below the age of one.

A careful history must be taken, with particular attention to delay of presentation, or if the history appears incompatible with the degree of injury.

ABDE It is important to assess the general behaviour of the child and how he or she relates to the parents. The child may sit in a state of 'watchful awareness' and be unwilling to be handled.

In every case of suspected non-accidental injury, it is imperative to undress the child fully and examine for injuries associated with NAI, such as finger marks over the upper arms or face, linear bruising or grazes compatible with strap marks to the buttocks, backs and legs, cigarette burns to the chest, abdomen and buttocks, and injury to the genitals. The paediatric team must always be notified in any suspected case.

Minor pretibial bruising is common in any active youngster and in itself has no significance.

CDE Acute epiglottitis is a life-threatening condition. It typically occurs in three- to five-year-olds, although it is often seen in younger children. The child looks severely ill, and sits forward, drooling. He may have audible stridor.

If clinically suspected, further examination of any sort is contraindicated for fear of precipitating laryngeal spasm and complete airway obstruction. The child should be left quietly with his mother and urgent help summoned, beginning with the most senior available anaesthetist.

A An ENT surgeon and senior paediatrician should also be contacted and the child taken to theatre without further delay. Under a general anaesthetic the epiglottis may then be visualised and the child intubated if necessary. He should then be nursed on an intensive care unit and treated with intravenous antibiotics such as chloramphenicol.

141 A child aged one

- A Weighs about 10 kg
- B Will answer you in short sentences
- C Is abnormal if he cannot walk
- D Often presents with fractures after falling
- E Will have a visible radial head on radiography

142 Bronchiolitis

- A Is a rare type of lower respiratory infection of infants
- B May lead to secondary infection and pneumonia
- C In children, usually leads to admission
- D Is usually caused by the rhinovirus
- E May be life-threatening

A Normal (and easy to remember) weights are (approximately):

at birth	– 3 kg
at 1 year	– 10 kg
at 7 years	– 20 kg
at 10 years	– 30 kg
at 12 years	– 40 kg

The normal range of development is wide, but at one year a child will say the odd word and can usually stand (with hands held, or alone). Non-accidental injury should be considered in any child with a fracture, but especially in the younger age groups. Rarely, there is an underlying bone disorder, such as brittle bone disease (osteogenesis imperfecta), although usually the family is well aware of the diagnosis. A normal one-year-old child will not usually fracture bones after a simple fall.

The ossification centres around the elbow (with minor variations between girls and boys) appear as follows:

Capitellum	2 years
Radial head	4 years
Epicondyle (medial)	6 years
Trochlea	8 years
Olecranon	10 years
Lateral condyle	12 years

These form the mnemonic 'CRETOL'. This is useful when assessing X-rays of the elbow after trauma.

BE Bronchiolitis is a common cause of respiratory infection in infants and toddlers. It may present with a febrile illness accompanied by wheezing, and is often caused by the respiratory syncytial virus (RSV). It can occur in epidemics. It can often be managed at home, but, if severe, may be life-threatening, especially if there is secondary bacterial infection.

Ribavirin is an antiviral agent that is an effective treatment for RSV, but it is also very expensive and not commonly used.

143 The diagnosis of child sexual abuse

- A Is becoming more common owing to the better awareness and increased willingness by professionals to confront the problem
- B Is usually obvious on the physical signs alone
- C Should result in the immediate removal of the child from the family home
- D Requires a multidisciplinary approach, which involves a full family and social history
- E Cannot be made in the presence of an intact hymen

AD

Child sex abuse, as defined by Schechter and Roberge, is 'the involvement of dependent, developmentally immature children and adolescents in sexual activities they do not truly comprehend, to which they are unable to give informed consent; or which violate social taboos of family roles'. The problem of child sex abuse has recently been brought to the attention of both the public and health workers alike. This has led to better awareness of the problem and allowed a more informed approach to the subject.

The signs of sex abuse may be very subtle, or indeed non-existent. The child may be unwilling to talk for fear of parental retribution, and the spouse of the abuser, although well aware of the situation, may wish to ignore it to avoid embarrassment or humiliation.

If child sexual abuse is suspected, a full examination should not be carried out unless the attending medical officer is specifically trained in the subject. Rather, the paediatric team should be notified immediately, so that they may perform the necessary examination and continue the ongoing care of the child. In this way, the child is spared the distress of multiple examinations.

Management requires a multidisciplinary approach. Once the diagnosis has been confirmed, a sensitive attitude must be maintained. It may not be in the best interest of the child to remove him/her from the home situation. He/she may see this as a punishment for misdemeanours he/she does not understand. It is rarely necessary to remove the child unless it is thought that he/she is in physical danger or may become so.

144 Indications for admission of a child who has had a fit include

- A No previous history
- B Several fits within the previous 24 h
- C To confirm the diagnosis
- D A difference in the nature of the fit compared with previous ones
- E To exclude treatable causes

145 The following are true of childhood fits

- A They may present with mood changes
- B An electroencephalogram will confirm the diagnosis of epilepsy in most cases
- C Blood sugar estimations are often lowered
- D They sometimes respond to a ketogenic diet
- E May be treated with intramuscular diazepam

ABCDE Fitting in childhood may present with short absences, mood changes, or falls. A common presentation in the A&E department is that of the tonic-clonic fit of *grand mal* epilepsy.

If it is the child's first fit, the child is admitted to hospital to make a diagnosis and exclude treatable cause. Other reasons for admitting a child after a fit include frequent fitting, status epilepticus, general parental anxiety, or if the fits have changed in nature.

The initial management is no different from that of any unconscious patient. The child should be placed on his side to protect the airway, although no attempt should be made to force the mouth open, or insert an airway, as this can cause unnecessary trauma to the mouth, lips and teeth. The child should be prevented from injuring himself by the judicious arrangement of pillows, and oxygen should be administered by mask or nasal prongs.

AD An EEG may be useful in clarifying the type of fit the child has suffered. Blood sugar levels are usually raised during a fit, and therefore hypoglycaemia cannot be ruled out as a cause.

The fitting is treated by intravenous or rectal administration of benzodiazepines, such as diazepam 0.2-0.3 mg/kg i.v., or 5 mg (under three years old) or 10 mg (over three years old) by rectal administration.

Paraldehyde is used instead of diazepam in some centres. It can be administered intramuscularly using a normal plastic syringe, since, although the drug will eventually polymerise the plastic of the syringe, it is safe if given without delay. It is given intramuscularly in doses of 1 ml per year of age (0.15 mg/kg).

In refractory cases, the patient may be given pheno-barbitone (5-20 mg/kg i.v. or i.m.). A general anaesthetic may be required to control the fits. In any case, both the duty anaesthetist and paediatrician should be involved in the early management of any fitting child. Fitting in itself raises the blood sugar, so that the presence of a normal BM Stix or Dextrostix does not necessarily rule out hypoglycaemia.

146 Vomiting in infants may be caused by

- A Intussusception
- B Meningitis
- C Otitis media
- D Pyloric stenosis
- E Lax cardia

147 Pyloric stenosis

- A Has autosomal recessive inheritance
- B Usually presents around six to nine months
- C Is more common in males
- D Is caused by smooth muscle hypertrophy of the pylorus
- E May cause dehydration

148 Stridor

- A Is commonest under the age of one
- B May be caused by epiglottitis
- C Is commonly caused by the parainfluenza virus
- D May be congenital
- E Is characteristic of asthma

149 Stridor

- A May be expiratory
- B May be caused by an inhaled foreign body
- C Occurs in croup
- D Is a characteristic sign of lobar pneumonia
- E Is associated with laryngomalacia

ABCDE Pyloric stenosis is associated with an abnormal growth of the smooth muscle of the pylorus, characterised by projectile vomiting typically at around four to six weeks of life. It has a familial tendency, being more common in the monozygotic twin of an affected child and in the male baby of a mother who had pyloric stenosis as a baby herself.

Examination may reveal a hungry, dehydrated infant, who appears otherwise well. There may be a palpable mass in the epigastrium, which becomes more prominent during feeding. A wave of peristalsis may be seen passing across the abdomen.

CDE

A careful history must be elicited from the parent, with particular reference to the frequency of the vomiting, and whether it is projectile or not. A common cause of regurgitation of feed, often described as vomiting, is poor feeding technique.

The child must be carefully examined for signs of meningitis, otitis media, throat infections, chest infections, gastroenteritis, or septicaemia.

Intussusception or volvulus are relatively uncommon presentations of vomiting, but should be carefully excluded, since the consequences are serious.

A lax cardia is a common cause of infantile regurgitation. These characteristically resolve within the first year of life, and may be treated expectantly, although the condition may be improved by thickening the feed and propping up the head end of the cot.

In any case of paediatric vomiting where the cause is not apparent, the on-call paediatric team must be consulted.

BCD Stridor is the inspiratory noise caused by obstruction of the upper airways. It may be congenital (e.g. laryngomalacia), often disappearing by the age of three, or acquired. The commonest acquired cause of stridor is parainfluenza infection, or croup, causing inflammation and swelling of the upper airways.

Epiglottitis (commonly caused by *Haemophilus influenzae* infection) is a less common, but life-threatening, cause of stridor, requiring immediate expert management. Asthma characteristically causes an expiratory wheeze. It is important to exclude inhaled foreign body in an otherwise well child who presents to the A&E department with stridor. Chest radiography is mandatory in such cases.

BCE

150 Swallowed foreign bodies in children

- A Usually require removal
- B Require daily radiographic monitoring
- C Are common
- D May not be radiolucent
- E Often impact at the splenic flexure

ORTHOPAEDICS

151 Fractured lateral malleolus

- A Is associated with inversion injury
- B May be treated with below-knee walking plaster
- C Usually presents with swelling and tenderness over the lateral malleolus
- D May require internal fixation
- E May be an avulsion fracture

CD

Swallowed foreign bodies in children are a common cause of parental concern. Most objects that reach the stomach will pass safely through the gastrointestinal tract causing no harm. Small, smooth objects, such as marbles, stones, or coins, do not require radiographic monitoring, although an initial radiograph may be helpful to confirm the diagnosis, to identify the object and to make sure the object has not been aspirated.

Sharper objects, such as pins, razor blades, etc., may also (surprisingly) pass through the gut without mishap, although consideration should be given to surgical removal in these cases, especially where monitoring of the patient is difficult. Small batteries are occasionally ingested and these can sometimes break up releasing the mercury salts contained within. The management of such cases varies, although many authorities advocate laparotomy and removal of the foreign material. A surgical opinion should always be sought.

ABCDE

Fractured lateral malleolus is most often associated with inversion of the ankle. It may be simply an avulsion fracture of the tip of the fibula, in which case conservative management may be employed, involving support, rest, ice and elevation. A reasonable alternative would be a below-knee walking plaster. Should the fracture involve the syndesmosis of the joint itself, the stability of the mortice of the ankle joint is at risk, and a more aggressive approach, such as internal fixation, is indicated.

It is important to insist on high-quality radiographs of the joint space while in the A&E department, as a very minor degree of displacement or widening of the ankle mortice can seriously reduce the articular surface and, if not treated properly, can lead to severe disability.

Fractures above this level do not usually affect the joint, and can often be managed in a below-knee walking plaster.

152 Olecranon bursitis

- A Is always treated with antibiotics
- B May need aspirating
- C Is often the result of repeated trauma
- D Requires an X-ray
- E May recur

153 Compression of the L5 nerve root is commonly associated with

- A Pain extending to the lateral aspect of the leg and dorsum of the foot
- B Degenerative changes on radiological examination
- C Loss of the knee jerk reflex
- D Diminished straight leg raising
- E A localised area of tenderness above the fifth lumbar vertebra

BCE

Olecranon bursitis is a commonly encountered problem in the A&E department. It presents as a painful swelling over the point of the elbow and is often associated with a history of repeated trauma to the elbow, for example in students who spend long periods of time at their books with elbows resting on their desks. It is common in the elderly suffering from osteoarthritis or rheumatoid arthritis.

In mild cases, the elbow may be managed conservatively by rest in a sling and protection and support with a gauze pad kept in place with Tubigrip. In more severe cases, the bursa may be aspirated in the A&E department under strict aseptic conditions. The resultant fluid should be sent off for culture and sensitivity. In the infected case, the patient should be treated with flucloxacillin 500 mg q.i.d. and phenoxymethylpenicillin 500 mg q.i.d. orally, and the elbow rested in a sling. The patient should be followed up at five days.

ABD

The L5 nerve root emerges between L5 and S1 and is a common site of compression by a prolapsed intervertebral disc. It does not supply the quadriceps muscle and is therefore not involved in the knee jerk reflex.

It is commonly implicated after injury to the intervertebral disc, either as a result of disc prolapse, or because of arthritic degeneration of the spine and disc, resulting in reduced disc space and nerve root compression.

154 Prolapsed intervertebral disc

- A Is common in the lower thoracic spine
- B May cause a lateral flexion of the spine
- C Is associated with disc degeneration
- D Is most common in the 50-60 year age group
- E Characteristically occurs anteriorly

BC

Prolapse of the L4-L5 intervertebral disc tends to involve the L5 nerve root, causing weakness of dorsiflexion of the ankle, particularly of the extensor hallucis muscle, and is associated with a patch of sensory loss over the web of the great toe.

The ankle jerk is usually only lost if the S1 nerve root is affected. In this case there is weakness of the peronei, toe flexors and tibialis posterior, with an anaesthetic area over the lateral side of the foot.

The patient presents in severe pain, walks only with difficulty and stands with spine flexed. There is often a history of lifting a heavy weight with a flexed spine. Examination reveals considerable spasm of the erector spinae muscle, and a flattening of the normal lumbar lordosis. There may be a fixed lateral flexion of the spine, known as a sciatic scoliosis. There is often tenderness over the lumbar spine, sacro-iliac joints and sciatic nerves on the affected side. Movements are restricted, especially flexion, and straight leg raising provokes pain down the back of the leg (often as far as the foot) and hamstring spasm.

Management may vary between centres, but the vast majority of patients will settle with strict bed rest on a firm mattress for two or three weeks. The patient may then be mobilised gradually back to normal activity. Occasionally, a firm lumbar support made of rigid polythene or a plaster jacket is required. In the more severe cases, a period of traction may be required in order to maintain the patient still in bed. Symptoms often recur.

Surgery may be recommended for those patients who develop sensory changes or muscle weakness, or in those who fail to respond to conservative management. Most disc prolapses occur postero-laterally. A central disc prolapse, although less common, may disrupt parasympathetic supply to the bladder and penis, causing urinary dysfunction or impotence. This is an orthopaedic emergency and should be treated with immediate surgical decompression. If, after initial examination in the A&E department, there is any doubt as to the appropriate treatment, orthopaedic advice should always be sought.

155 Tenosynovitis

- A Most commonly occurs in the wrist flexors and extensors
- B Of the flexor pollicis longus tendon is known as De Quervain's syndrome
- C May occur as the presenting feature of rheumatoid arthritis
- D Usually improves with rest
- E May require surgery

156 Repetitive strain injury (RSI)

- A Is associated with rapid, repetitive movements of the fingers
- B May be associated with painful elbow, shoulder or neck
- C May appear more problematic if litigation is being considered
- D Is diagnosed by clinical examination in most cases
- E Is associated with schizophrenia

157 Barton's fracture of the wrist

- A Is usually treated by reduction and immobilisation in a below-elbow plaster
- B Involves radiocarpal subluxation
- C Is a severe form of a Colles' fracture
- D Is a fracture through the distal radius involving the joint
- E Is often treated by open reduction and internal fixation

158 Boutonniere deformity

- A Results in flexion at the metacarpophalangeal joint and extension at the proximal interphalangeal joint
- B Is common in rheumatoid arthritis
- C Is associated with avulsion of the central slip of the extensor tendon from the base of the middle phalanx
- D Is caused by avulsion of the extensor tendon from the distal phalanx
- E Is usually treated by splinting so long as the deformity may be corrected passively

ACDE Tenosynovitis is a condition in which a tendon sheath becomes inflamed. It is associated with rapid, repetitive movements of the fingers as would occur in e.g. a typist or keyboard operator. It affects the flexor or extensor tendons of the thumb or fingers, usually where they cross the wrist within the synovial sheath. De Quervain's syndrome is an inflammation of the tendon sheath of the abductor pollicis longus and extensor pollicis brevis muscles as they cross the radial styloid. The patient will complain of pain on movement of the fingers or wrist, and there may be associated crepitus over the affected tendon. The symptoms are often chronic.

ABC Repetitive strain (or overuse) injury is often related to the same predisposing factors as tenosynovitis. However, the symptoms are often not as localised. Often the whole forearm, elbow, shoulder and even neck cause discomfort. The diagnosis is made mainly on the history, since there are often no definite clinical signs.

The aetiology of this condition has been the subject of much debate. Some authorities have suggested that there may be an important psychogenic component in some cases. Predisposing factors include poor working posture, few changes in position and arm movements.

The severity and persistence of the symptoms may be affected by the psychological state of the patient and the possibility of financial gain by impending litigation.

BCDE A Barton's fracture is a marginal fracture of the distal radius with radiocarpal subluxation. Accurate reduction is essential for satisfactory function and to prevent subsequent osteoarthritis of the wrist. Open operation and internal fixation are often required.

BCE The extensor mechanism of the finger consists of a dorsal expansion of the extensor digitorum tendons, which give off slips to the middle phalanx. This may rupture as a result of trauma, or other conditions, such as rheumatoid arthritis, thus allowing the proximal interphalangeal joint to 'herniate' dorsally. There is thus a flexion at the proximal interphalangeal joint and extension at the distal interphalangeal joint.

Treatment is by splintage or, if the deformity cannot be corrected passively, corrective surgery.

159 Divided extensor tendon of the hand

- A Can be treated conservatively
- B May lead to a Boutonniere deformity
- C After repair, should be splinted with the metacarpophalangeal joint flexed and both interphalangeal joints extended
- D Can lead to a mallet finger
- E Should only be repaired under general anaesthetic

160 Radial nerve injury

- A Usually results in severe sensory deficit
- B Commonly causes the inability to extend the elbow
- C Characteristically occurs in mid-shaft fractures of the humerus
- D May occur if the patient goes to sleep with an arm over the side arm of a chair
- E Affects extension of the thumb

161 Median nerve injury

- A Results in a 'pointing finger' appearance
- B Is a recognised complication of supracondylar fracture of the humerus
- C Causes wasting of the hypothenar eminence
- D Causes weakness of abduction of the fingers
- E May result in a 'claw hand'

162 Median nerve division

- A More commonly occurs in the distal forearm, where it is more superficial than proximal
- B Is often accompanied by division of flexor tendons
- C At the wrist, causes weakness of abduction of the thumb
- D Results in sensory loss over the thenar eminence
- E Should be treated by primary repair

- ABCD** If the tendon is divided at its insertion, the finger may be treated in a mallet splint in the same way as an avulsion injury. It is usually possible to repair these injuries in the A&E department under regional block. The hand is then splinted in a position of rest.
- CDE** The motor branch to triceps arises high up in the axilla from the posterior cord of the brachial plexus and is therefore often spared in lesions of the radial nerve. Its course runs close to the humerus in the spiral groove and as such is commonly damaged in fractures of the shaft of the humerus. It may also be crushed when the inebriated patient sleeps with his arm hanging over the side of a chair - the so-called 'Saturday night arm'.
- The sensory distribution of the radial nerve includes skin over the extensor muscles of the arm and forearm. In the hand, it is limited to an area over the radial side of the dorsum extending to the proximal interphalangeal joints of the second, third and sometimes fourth digits.
- AB** Median nerve damage is commonly caused by penetrating injury at the wrist, but is also associated with supracondylar fracture of the humerus, particularly in children. The distal fragment is displaced dorsally, stretching the median nerve over the proximal fragment. Division of the median nerve above the elbow joint causes loss of flexion of the thumb, index and middle fingers, so that the unopposed extensors give the hand a 'pointing finger' appearance.
- ABCDE** The median nerve supplies the three muscles of the thenar eminence (flexor pollicis brevis, opponens pollicis and abductor pollicis brevis). Of these, the abductor pollicis brevis is nearly always supplied solely by the median nerve, whereas the other muscles may be innervated by the ulnar nerve as well. Examination of median nerve function is therefore based on contraction of the abductor pollicis brevis muscle. It is often more useful to palpate the muscle for signs of contraction, as thumb abduction is also performed by the long abductor of the thumb. A claw hand is the result of an ulnar nerve lesion.
- Treatment of nerve division is by primary suture using microsurgical techniques to obtain the best results.

163 Ulnar nerve division

- A May result in a 'claw hand'
- B Causes wasting of the interossei
- C Causes weakness of abduction of the thumb
- D At the wrist, causes weakness of wrist flexion
- E Paralyzes the fourth lumbrical

164 Anterior dislocation of the shoulder

- A Is more common than posterior dislocation
- B May be reduced by Kocher's manoeuvre
- C May require surgery if recurrent
- D Must always be reduced under anaesthesia
- E May occur spontaneously in patients with recurrent dislocation

165 Dislocated shoulder

- A Causes loss of the normal deltoid curvature
- B Usually requires potent analgesia before reduction
- C May become chronic
- D May occur after a fall on to the outstretched hand
- E May occur as a result of an epileptic fit

166 In a patient with dislocation of the shoulder

- A An axial radiograph should be carried out
- B An area of anaesthesia over the deltoid region suggests damage to the radial nerve
- C Deltoid muscle contraction must be assessed before reduction
- D The shoulder must be immobilised for at least three weeks post-reduction, especially in elderly people
- E A fracture of the greater tuberosity is a common accompaniment

167 The following are signs of axillary nerve damage after dislocation of the shoulder

- A Loss of flexion at the elbow
- B Loss of deltoid contraction on attempting to abduct the shoulder
- C Sensory loss over the insertion of the deltoid
- D Wrist drop
- E Continuing pain in the shoulder even after the dislocation has been reduced

ABE The ulnar nerve supplies all the intrinsic muscles of the hand, except the three muscles of the thenar eminence and the radial two lumbricals. After division of the nerve at the elbow, unopposed action of the extensors of the fourth and fifth digits causes a claw hand or *main en griffe* appearance.

ABCE The axillary nerve is a branch of the posterior cord of the brachial plexus, and may be damaged after dislocation of the shoulder, causing paralysis of the deltoid muscle and hypoaesthesia over the 'regimental badge' area. Motor function of the deltoid muscle is usually more easily assessed by palpation of the muscle as the patient attempts to abduct the arm. Evidence of axillary nerve damage must be noted before reduction so that subsequent legal action may be avoided.

ABCDE Fractures of the greater tuberosity are associated, as is damage to the glenoid labrum itself. This rim of cartilage helps to stabilise the humeral head within the glenoid cavity, and damage to it may lead to instability and recurrent dislocation.

The reduction itself may be performed by the Kocher's manoeuvre, in which traction is applied, followed by external rotation, adduction and finally internal rotation. Other procedures include the Hippocratic method, in which the ball of the operator's stockinged foot is placed into the axilla of the affected arm and traction applied.

ACE It may be possible to reduce a dislocated shoulder without analgesia, especially if the patient presents early. If there is muscle spasm, however, this would be unkind and difficult, and a potent analgesic, such as pethidine, should be given.

After reduction, the shoulder must be rested in a full arm sling and prevented from abduction by use of elastic body bandage, or placing the arm beneath the shirt. The duration of immobilisation will vary depending on the age of the patient and his expectations, but, as a general rule, the older the patient, the less time should the arm be immobilised for fear of subsequent stiffness.

BC Although the patient may not be able to abduct the shoulder joint because of pain, visual inspection will reveal contraction of the deltoid muscle and confirm its function.

Wrist drop is caused by radial nerve damage.

168 Dislocation of the elbow

- A Is caused by a fall on the outstretched arm
- B In a child, usually requires a general anaesthetic for reduction
- C Is reduced by traction on the extended arm
- D Is most common in the elderly
- E Gives the classical 'dinner fork' deformity

169 Torn medial meniscus of the knee

- A Is common in carpet layers
- B Is associated with a positive McMurray's manoeuvre
- C Is more common than a tear of the lateral meniscus
- D Often unites spontaneously with conservative management
- E May be associated with rupture of the anterior cruciate ligament

170 Common findings in a patient with a damaged meniscus include

- A The inability to extend the knee fully
- B An effusion
- C Localised pain on palpating the joint space
- D Characteristic radiological changes
- E History of a twisting injury

171 A pulled elbow

- A Commonly occurs in toddlers
- B Has a characteristic X-ray appearance
- C Occurs when the head of the radius is pulled down into the annular ligament
- D May be reduced by full supination of the forearm
- E Is caused by a fall onto the outstretched arm

- AB** Dislocated elbow is commonly caused by a fall on the outstretched arm and is more common in children than in the elderly. On presentation, the radial pulse must be assessed, adequate analgesia given and radiographs taken to exclude associated fractures of the olecranon process or coronoid. Reduction is performed with the arm in the flexed position and by applying firm pressure to the olecranon process using both thumbs. This may be carried out under sedation and analgesia, although local nerve blocks (axillary, supraclavicular, or interscalene) have been used. Children usually require general anaesthesia.
- ABCE** The medial meniscus of the knee is more vulnerable to damage than the lateral, and damage is commonly caused by a twisting movement on a weight-bearing, flexed knee (e.g. in footballers and skiers). The patient presents with an acutely painful, swollen knee. On examination, he may be unable to extend the knee (a locked knee), there may be an effusion and there may be a tender area over the medial joint space.
- ABCE** The peripheral attachment of a meniscus to the capsule is well supplied with blood vessels, and tears in this region can therefore unite. The cartilage itself, however, is avascular and seldom unites, leaving fragments of cartilage, which inevitably redisplace. Management is operative removal of the torn fragments, or it may be possible to suture the cartilage.
- ACD** A pulled elbow is caused by a child falling when his hand is being held by an adult, or by an older sibling swinging the smaller child round by his arms. The head of the radius is pulled down into the annular ligament (which normally encircles the neck of the radius). The child is tearful and in pain, and holds the elbow in a semiflexed position. Radiographs are unhelpful, although they must be performed to exclude associated fractures. Diagnosis is made on the history and examination, and treatment is by supination of the forearm, resulting in a palpable click over the head of the radius. An alternative treatment is by simple rest in a sling, which usually results in spontaneous reduction of the head of the radius. The possibility of non-accidental injury must be considered.

172 Concerning fractures

- A A compound fracture is one in which there are more than two fragments of bone
- B A simple fracture is one in which the bone is not exposed
- C A greenstick fracture is one in which the bone may be angulated, but is never displaced
- D Rehabilitation should begin as soon as the patient is out of plaster
- E In general, the older the patient, the longer the fracture should be immobilised, since the bones take longer to heal

173 Supracondylar fracture of the humerus

- A Is common in children
- B Is characterised by backward displacement of the proximal fragment
- C Perfect anatomical reduction is essential
- D May result in gangrene of the digits
- E May lead to Volkmann's ischaemic contracture

174 Fractures of the pelvis

- A Are usually unstable
- B Often require internal fixation
- C May cause severe blood loss
- D Are often associated with other fractures of the lower limb
- E May cause damage to the urinary tract

- C** Compound fractures are those in which bone ends are exposed or there is a laceration over the fracture. Simple fractures have only two fragments whereas comminuted fractures may have several.
- It is important in most fractures to begin active and passive exercises as soon as possible after the injury in order to avoid stiffness and muscle wasting later on. These may commence while the patient is still in plaster. This is especially true in the elderly patient, where function, rather than appearance, is of prime concern.
- ADE** Lateral tilting and rotational deformities of the lower fragment must be reduced, although a moderate anteroposterior displacement is usually corrected by remodelling as the bone grows.
- CDE** Unstable fractures of the pelvis occur when there are fractures or dislocations at two points opposite one another. For example, a disruption of the symphysis pubis may be associated with a subluxation of the sacro-iliac joint, or fractures through both pubic rami may be associated with fracture through the ilium itself. Such fractures are associated with large amounts of blood loss (often up to six units), and because the effect of this may not be immediately apparent, blood loss is often underestimated.
- Most fractures, however, are stable and require only bed rest.

175 Dislocation of the hip

- A Usually occurs anteriorly
- B Causes flexion, adduction and external rotation of the affected hip
- C Sometimes leads to avascular necrosis of the femoral head
- D Is usually treated with open reduction and internal fixation
- E May cause damage to the sciatic nerve

176 Fractured neck of femur

- A Causes shortening of the leg
- B Causes internal rotation of the leg
- C May be treated with hemiarthroplasty
- D May occur spontaneously
- E May be pathological

177 Fracture of the neck of the femur

- A Occurs most commonly in elderly females
- B Usually requires internal fixation
- C May be caused by a trivial injury
- D Causes shortening and internal rotation of the affected limb
- E Is more likely to result in avascular necrosis of the head of the femur if the fracture is intertrochanteric, rather than subcapital

CE These injuries are often the result of road traffic accidents when the dashboard of a car is forced back onto the flexed knee, or alternatively they are caused by a heavy weight landing on a flexed back.

The hip may dislocate anteriorly, posteriorly (usually), or centrally. In about half the cases of posterior dislocation, the head carries with it a fragment of bone from the rim of the acetabulum. Because the sciatic nerve is in close proximity to the path of displacement, it may easily be damaged.

The dislocation should be reduced under general anaesthesia as soon as possible. Axial traction is applied to the femur flexed at 90 degrees. The femur is then externally rotated. After reduction, the limb is supported in traction (either skeletal or skin) for a period of three to six weeks. Gradual mobilisation occurs during this time.

Recognised complications include sciatic nerve injury, post-traumatic ossification, avascular necrosis of the femoral head and osteoarthritis.

In central fracture-dislocations, the femoral head is driven through the floor of the acetabulum; these are usually caused by a fall on to one side. Treatment depends on the degree of comminution and displacement of the acetabular fragments. If a smooth acetabular surface can be restored, every effort must be made to attain this end by reduction of the displaced fragments, usually by traction, in order that useful function may be restored. In the case of a severe dislocation, it may be better to leave the femoral head in the displaced position, where it is stable, painless and should achieve useful, if restricted, movement.

Post-reduction bone scanning should be performed to check the blood supply to the head of the femur prior to weight-bearing.

ACDE Fractured neck of femur may indeed be the cause of the fall rather than vice versa, and may occur as a result of minor trauma, such as stepping off a kerb.

Blood supply to the femoral head depends on ascending channels in the capsule and in the bone itself and descending vessels via the ligamentum teres. The more proximal the fracture, the more the blood supply is embarrassed, until the viability is dependent almost entirely on the vessels associated with the ligamentum teres, which may not be sufficient to prevent avascular necrosis.

ABC

178 Colles' fracture

- A Is characterised by ventral displacement of the distal fragment
- B Presents clinically as a 'dinner fork' deformity
- C Is associated with tendon rupture
- D Is associated with stiffness of the shoulder
- E Will always require reduction

179 Colles' fracture

- A Is often associated with fracture of the scaphoid
- B Is commoner in winter
- C May lead to a permanently stiff wrist in the elderly
- D Is characterised by backward tilt, backward displacement and ulnar deviation of the distal fragment
- E May be a greenstick fracture in a child

180 Recognised complications of Colles' fracture include

- A Sudeck's atrophy
- B Median nerve compression
- C Radial nerve compression
- D Late rupture of the extensor pollicis longus tendon
- E The 'shoulder-hand syndrome'

181 Smith's fracture

- A Is associated with volar angulation of the distal fragment
- B May need internal fixation
- C Is associated with a supination injury to the forearm
- D Must be reduced under general anaesthesia
- E Requires an above-elbow plaster with the forearm in pronation

182 Fractured clavicle

- A Usually requires careful reduction
- B May jeopardise blood supply to the overlying skin
- C May be caused by a fall on to the outstretched arm
- D Should be immobilised in a plaster of Paris U slab
- E Commonly occurs between the insertions of the coraco-clavicular and the costo-clavicular ligaments

BCD Colles' fracture is a fracture of the distal radius associated with dorsal tilt, dorsal displacement, impaction and radial deviation of the distal fragment. It occurs in the elderly, often as a result of a fall on to the outstretched hand, and is commoner in the UK in winter owing to slippery conditions on the pavements and roads. In the child, the fracture is often greenstick in nature, with a dorsal angulation of less than about 15%, so that reduction may not be necessary.

BCE These fractures are easily treated in the A&E department. The wrist is anaesthetised by a regional (Bier's) block, local nerve blocks, or direct injection of anaesthetic into the fracture site itself (haematoma block). Reduction is achieved by traction and replacement of the distal fragment by direct pressure over the dorsum of the wrist, and the hand is immobilised in a plaster back slab in a position of flexion and ulnar deviation. Once the swelling is reduced, the plaster may be completed and should remain for between four and six weeks.

ABDE Complications commonly include stiffness of the shoulder, so that active movement must be encouraged immediately. Stiffness of the wrist, with limitation of movement, is also a problem and may be reduced by intensive physiotherapy after removal of the plaster. Recognised late complications include ischaemic necrosis of the distal fragment and rupture of the extensor pollicis longus tendon.

AB R. W. Smith described this fracture in 1847, although Barton had described a similar injury in 1838. The term Barton's fracture is now reserved for those which involve the joint space itself.

Smith's fractures, like Colles' fractures, are caused by a fall on the outstretched hand. Unlike Colles' fracture, it involves a volar displacement of the distal fragment and results from a pronation injury. They tend to be less stable than Colles' fractures and some authorities recommend internal fixation for all of them. A reasonable alternative, however, is to reduce the fracture under regional anaesthesia and immobilise in an above-elbow plaster in full supination. Subsequent X-rays must be carefully examined for signs of slippage of the distal fragment.

BCE Clavicles are commonly fractured after heavy falls on to an outstretched arm or on to the shoulder. Because the ligaments anchoring the bone to the coracoid process laterally, and the first rib medially, are stronger than the bone itself, the fracture occurs between these two sites, i.e. towards the middle.

The patient presents with an acutely painful shoulder and supports his arm with his other hand. Treatment is to rest the arm in a broad arm sling, analgesia and early mobilisation so as to avoid a stiff shoulder, particularly in the elderly. Reduction should be considered only if the overlying skin is in danger of ischaemia in the case of a badly displaced fracture, or if the cosmetic result is likely to be unacceptable.

183 Ruptured Achilles tendon

- A Causes 'foot drop'
- B Is usually caused by a direct blow to the back of the leg
- C Is associated with a palpable gap in the tendon
- D Causes weakness of dorsiflexion of the foot
- E May be diagnosed by squeezing the calf with the patient in a kneeling or lying position

184 Acute rupture of the Achilles tendon

- A May follow steroid injection
- B Will not unite if left untreated
- C May be treated conservatively by immobilisation in a plaster cast
- D May cause difficulty in standing on tip-toe
- E Is best repaired operatively in the elderly

EAR, NOSE AND THROAT

185 Recurrent epistaxis in adults

- A May be associated with hypertension
- B May be a cause of anaemia
- C Is usually the result of bleeding from Little's area
- D Usually requires surgical intervention
- E May be treated with nasal packing

CE Ruptured Achilles tendon occurs in adults, and may be either spontaneous or a result of athletic activity. Alternatively, it may occur after injection with steroid preparations. The patient presents with a painful, swollen ankle. On examination, there may be a visible step in the outline of the tendon, although this is by no means invariable because of swelling.

Clinical evidence of a rupture is given by a positive 'calf squeeze' (or Simmons) test. The patient kneels on a stool, and the examiner squeezes each calf in turn. On the normal side there will be plantar flexion of the foot, whereas on the affected side there is none. Treatment may be conservative, in which case the leg is immobilised in plaster of Paris with the foot in plantar flexion, or by surgical repair.

Many studies have shown no significant difference in results between operative and conservative management. The final decision will depend on the age, occupation and expected physical abilities of the patient, as well as the personal preference of the attending surgeon.

ABE Recurrent epistaxis in adults may be associated with hypertension, and often originates from the sphenopalatine artery, situated posterosuperiorly in the nose and therefore impossible to see by inspection. Cautery is usually unsuccessful.

It can usually be treated by direct pressure to the bleeding site by pinching the nose distal to the nasal bone. This is done leaning forward and must be carried out for at least 20 min. Should this be unsuccessful, both nostrils may be packed with ribbon gauze impregnated with bismuth iodide petroleum paste. Alternatively, a Brighton balloon may be inserted, thus applying pressure to the anterior and posterior nares simultaneously. Rarely, a posterior pack may be required, but this procedure is uncomfortable and technically more complex, and should not be attempted by the inexperienced, except under supervision. Very rarely, a maxillary or external carotid artery ligation may be required.

In children, the source of the bleeding is nearly always from Little's area on the anterior septal wall. If this is easily identified, it can often be treated successfully by either electrical or chemical cautery (using silver nitrate sticks). Antifibrinolytics, such as aminocaproic acid or tranexamic acid, are used in some centres.

Bleeding disorders must be excluded in all cases of recurrent epistaxis.

186 Concerning ulceration of the tongue

- A Aphthous ulcers are common, and often occur on the lateral borders or undersurface of the tongue
- B Ill-fitting dentures may be the cause
- C If chronic, a biopsy should be taken, to exclude malignancy
- D Ulceration may be caused by lichen planus
- E It is associated with epilepsy

187 Subperichondrial haematoma of the ear

- A Usually results from a shearing blow
- B Will usually resolve completely with no treatment
- C May be treated by evacuation of the clot and reapposition of the cartilage and perichondrium by pressure dressings
- D May result in pressure necrosis of cartilage
- E May lead to severe cosmetic deformity

188 Vertigo can be caused by

- A Vertebro-basilar insufficiency
- B Paracetamol
- C Vestibular neuronitis
- D Multiple sclerosis
- E Streptomycin

189 Vertigo may be associated with

- A Vomiting
- B Nystagmus
- C Incoordination
- D Diplopia
- E Syphilis

- ABCDE** Other causes of lingual ulceration include vitamin deficiency, Stevens-Johnson syndrome, blood dyscrasias and drug reactions. Epileptics may suffer from lingual ulceration, either because of biting their tongues during a fit, or from a drug reaction to Epanutin.
- Idiopathic, but persistent, apthous ulceration may be treated by the direct application of hydrocortisone preparations.
- Malignancy must always be excluded by biopsy where ulceration has not healed within six weeks.
- ACDE** Subperichondrial haematoma is the result of direct shearing blows to the ear, and is common in rugby players and boxers. The pinna is ballooned, and the normal outline of the cartilage is lost.
- If the patient is seen straight away, treatment consists of aspiration of the clot and application of a pressure dressing to reappose cartilage and perichondrium. If there has been a delay in seeking treatment, surgical evacuation is required. Failure to treat this condition will result in the ugly deformity known as cauliflower ear.
- A broad-spectrum antibiotic is mandatory.
- ACDE** Vertigo is the hallucination of movement with elements of rotation. The patient may feel either that the surroundings are moving around him, or that he is moving relative to the surroundings. It may be accompanied by pallor, sweating, nausea, vomiting and nystagmus.
- Diagnosis depends mainly on the history. This may include loss of coordination and slurred speech, aural symptoms, such as tinnitus and deafness, or associated neurological symptoms, such as weakness, diplopia, headache, or loss of consciousness, associated with brainstem ischaemia.
- ABCDE** Vertebro-basilar insufficiency may cause episodic vertigo, associated with head movement, in particular neck extension or rotation. Vestibular neuronitis is usually caused by a viral infection leading to a sudden onset of vertigo, which usually settles over a period of 6-12 weeks depending on the age of the patient.
- Ototoxic drugs such as the aminoglycosides and streptomycin affect labyrinthine function, causing vertigo and ataxia, which may become permanent. Other causes of vertigo include benign paroxysmal positional vertigo, trauma, alcohol, syphilis, perilymph fistula and geniculate *Herpes zoster* infection (the Ramsey-Hunt syndrome).

190 Ménière's disease

- A Is caused by a viral infection
- B Commonly presents under the age of 35 years
- C Is usually unilateral
- D Causes conduction hearing loss
- E May be treated with cinnarizine

191 Ménière's disease is associated with

- A Tinnitus
- B Nausea
- C Multiple sclerosis
- D Noise intolerance
- E Vertigo

192 Peritonsillar abscess (quinsy)

- A Is more common in children than adults
- B Is a complication of acute tonsillitis
- C Is associated with trismus
- D Should be treated with systemic penicillin without delay
- E Should be treated with incision and drainage only under general anaesthetic

- CE** Ménière's disease is a condition of unknown aetiology presenting at any age, but most commonly between 40 and 60 years. The presenting symptoms are characteristically unilateral, but may progress to the other side in 25% of cases. It is associated with recurrent tinnitus, vertigo and fluctuating sensory (cochlear) deafness. The patient may complain of nausea, vomiting and intolerance to loud noises and noise distortion.
- ABDE** Treatment is usually prophylactic, and may include salt and fluid restriction and vestibular sedatives, such as cinnarizine 15-30 mg t.d.s. or prochlorperazine 5-10 mg t.d.s. Surgical therapy includes saccus endolymphaticus drainage, stellate ganglion blockade, labyrinthectomy and division of the vestibular nerve. All cases require psychological support and reassurance.
- BCD** Peritonsillar abscess, or quinsy, is a collection of pus between the tonsillar capsule and its bed. It is an acutely painful condition, characterised by general malaise, fever and difficulty in swallowing. Treatment is by the immediate administration of antibiotics, such as penicillin-G 600 mg i.m. or cephadrine 500 mg. The abscess should then be incised with a scalpel, with or without topical anaesthesia. Large amounts of pus may be obtained, to the great relief of the patient. This procedure must only be carried out after consultation with an ENT surgeon.

OBSTETRICS AND GYNAECOLOGY

193 Ruptured ectopic pregnancy

- A May mimic appendicitis
- B Is usually associated with profuse vaginal bleeding
- C Is associated with haemorrhagic shock requiring blood transfusion
- D Is an emergency
- E May present with a rigid abdomen

194 Ectopic pregnancy

- A Is more common in patients with previous pelvic inflammatory disease
- B Usually presents at 12-14 weeks of pregnancy
- C May rupture
- D May cause pain in the shoulder, if ruptured
- E Often presents with profuse vaginal bleeding

195 In the management of suspected ectopic pregnancy

- A Intravenous access via a wide-bore cannula is essential
- B A negative urinary RAMP test excludes the majority of ectopics
- C Blood samples must be sent for urgent 'group and save'
- D An infusion of colloid, such as polygeline or Haemaccel, is appropriate
- E An ultrasound scan may reveal an intrauterine pregnancy, making the diagnosis of ectopic pregnancy highly unlikely

ACDE Ectopic pregnancy often presents at 4-12 weeks gestation with lower abdominal pain and scanty vaginal bleeding. It may present before the patient is aware that she is pregnant. Presentation is variable and need not necessarily be accompanied by abdominal pain.

Four units of blood are cross-matched and the patient immediately referred to the gynaecologists.

Anti-D immunoglobulin must be given if the patient is rhesus negative.

ACD

ABDE

196 Acute salpingitis

- A Is a sexually transmitted disease
- B Is usually caused by *Trichomonas*
- C Causes pain on moving the cervix
- D Characteristically presents with bilateral abdominal pain, dyspareunia and menstrual irregularities
- E Is treated with penicillin-V 500 mg q.i.d. for two weeks

197 Spontaneous abortion

- A Is defined as the expulsion of the products of conception before the 32nd week of pregnancy
- B Is commonest between 14 and 18 weeks gestation
- C Is commonly known as a 'miscarriage'
- D May result in maternal sensitisation, and therefore rhesus negative patients should be given anti-D immunoglobulin
- E Becomes inevitable if the os is open

ACD This is caused principally by *Chlamydia* or *Gonococcus*. The patient may present with fever, malaise, dyspareunia, vaginal discharge, menstrual irregularities and lower abdominal pain. The white cell count and erythrocyte sedimentation rate (ESR) are often raised.

Urethral and endocervical swabs must be taken for both *Chlamydia* and *Gonococcus* and sent in suitable transport media direct to the laboratory.

Suitable antibiotic treatment includes tetracycline 500 mg q.i.d. and metronidazole (Flagyl) 400 mg t.d.s., both taken orally for one week. The sexual partner must be treated as well.

CDE Spontaneous abortion may be threatened, in which case the cramps are mild, there is scanty bleeding and the cervical os is closed, or it may become inevitable. In this case the pain is more severe, the bleeding more persistent and the os is seen to be open, perhaps with products of conception protruding from the cervical canal.

They are most common up to 14 weeks gestation and should be referred to the gynaecologists for evaluation of fetal viability and evacuation of retained products of conception (ERPC) if the fetus is non-viable (inevitable, incomplete, or missed abortion).

198 Clinical features of severe placental abruption include

- A A degree of shock out of proportion to the extent of blood loss
- B Tachycardia
- C Oliguria
- D Obvious fetal parts felt *per vaginam*
- E Uterus small for dates

199 Antepartum haemorrhage

- A Is defined as vaginal bleeding before the 24th week of gestation
- B May cause haemorrhagic shock
- C Occurs in approximately 3% of all pregnancies beyond 28 weeks gestation
- D Should be investigated by ultrasound, following vaginal examination in the A&E department
- E Is associated with obesity

200 A patient with antepartum haemorrhage caused by placenta praevia

- A Usually presents with painful vaginal bleeding
- B Should have a clotting screen carried out
- C Should be allowed home if haemorrhage ceases
- D Is more likely to have a transverse presentation
- E Should be given anti-D immunoglobulin if she is found to be rhesus negative

ABC Antepartum haemorrhage is defined as bleeding from the genital tract after 28 weeks of pregnancy. The common causes include placenta praevia (separation of the placenta lying within the lower uterine segment), abruptio placentae (separation of a normally situated placenta) and lesions of the cervix or vagina. A proportion are of unknown cause. About 3% of all pregnancies progressing beyond 28 weeks gestation are associated with this complication.

BC Abruptio placentae is caused by rupture of one or more maternal spiral arterioles. This may result in:

- (a) Revealed haemorrhage, in which case the blood tracks between the membrane and the uterine wall, escaping into the vagina.
- (b) Concealed haemorrhage, in which case a large haematoma forms between the placenta and the uterus. No external bleeding occurs.
- (c) Mixed haemorrhage, which is the commonest form and combines features of both (a) and (b).

BDE Abruptio placentae is associated with high parity and poor nutrition, hypertension, trauma, sudden loss of liquor and amniocentesis in late pregnancy. The clinical features include constant lower abdominal pain with or without vaginal bleeding, and on examination there may be a large tender uterus and difficulty in palpating fetal parts. The fetal heart sounds may be irregular or absent, and both oliguria and proteinuria may be present.

Placenta praevia presents as vaginal bleeding of varying severity, commonly occurring between 32 and 37 weeks gestation. It may be preceded by several smaller bleeds. The bleeding is usually painless and the abdomen soft and non-tender to palpation. There is typically no fetal pole in the lower segment, i.e. the presenting part is high, and transverse or oblique presentation is common. A history of high-presenting part or variable lie should raise the suspicion of a placenta praevia even in the absence of vaginal bleeding.

Management of antepartum haemorrhage in the A&E department must be carried out in consultation with the obstetric on-call team. A vaginal examination must not be performed until an ultrasound scan has been carried out to rule out the diagnosis, because of the danger of provoking further bleeding. Intravenous access should be obtained and fluids given to correct hypovolaemic shock. Blood should be taken at the same time for baseline haemoglobin, platelets, blood group and clotting studies as well as cross-match, depending on the clinical status of the patient. Disseminated intravascular coagulation (DIC) is a risk with major haemorrhage.

Anti-D immunoglobulin should be administered as necessary. Urine output should be monitored closely. The patient should be referred to the on-call obstetric team for localisation of the placenta by ultrasound, and further management.

SURGERY

201 Raised serum amylase levels are associated with

- A Appendicitis
- B Duodenal ulcer
- C Diverticulitis
- D Pancreatitis
- E Spastic colon

202 Appendicitis is associated with

- A Vomiting
- B Raised white cell count
- C Periumbilical pain
- D Mass in the right iliac fossa
- E Meckel's diverticulitis

203 Acute appendicitis

- A Is more likely to resolve in the non-obstructed form
- B Is more common in primitive society
- C Is associated with sterile dysuria
- D Is associated with haematuria
- E Is treated by appendicectomy

204 Acute appendicitis

- A Is more common in males
- B Is associated with pain on extending the right hip
- C Is usually fatal if not treated
- D Should be treated by urgent operation if an appendix mass has formed
- E Is commonly caused by appendicular obstruction

205 The following conditions may closely mimic appendicitis

- A Meckel's diverticulitis
- B Acute salpingitis
- C Constipation
- D Crohn's disease
- E Ectopic pregnancy

BD Acute appendicitis is the commonest abdominal emergency, affecting one-sixth of the British population at some time. It is more prevalent in Western society and this is thought to be diet-related. It is uncommon in the very young and the elderly. The incidence is the same in both sexes.

Appendicitis usually develops secondary to obstruction of the lumen either from hypertrophy of the follicles in the wall of the appendix (in children), or rarely from obstruction by a faecolith (in adults). Other causes include caecal carcinoma, Crohn's disease, or worms.

ABCD The appendix (like the rest of the bowel) is innervated by the autonomic nervous system. Appendiceal pain is at first poorly localised and occurs mainly around the umbilicus. As the condition progresses, the inflammatory process begins to involve the parietal peritoneum. This then involves somatic nerves supplying the abdominal wall and localises the pain to the right iliac fossa.

ACE Presenting symptoms include abdominal pain, anorexia, nausea, vomiting and constipation or diarrhoea.

On examination, there is tenderness in the right iliac fossa, with or without guarding. There may be a mild fever (in association with perforation or abscess formation), tachycardia, furred tongue and fetor oris.

BE If the inflamed appendix lies in the retrocaecal position, there may be spasm of the iliopsoas muscle, producing pain on extension of the right hip. Rectal examination may reveal tenderness in the right iliac fossa, and examination of the blood may reveal polymorph leucocytosis.

At operation, and in the presence of a normal appendix, other possible inflammatory lesions must be excluded, such as Meckel's diverticulitis, acute salpingitis, cholecystitis and terminal ileal Crohn's disease. Gastric contents in the peritoneal cavity suggests perforated peptic ulcer, while free blood may be due to a ruptured ectopic pregnancy or twisted ovarian cyst.

ABDE If left untreated, the patient would probably survive. Omentum wraps itself around the appendix, preventing the spread of infected fluid. The inflammatory process resolves, or an abscess forms within the mass spontaneously draining into the bowel. Rarely, the omentum fails to localise the condition, so that perforation leads to generalised peritonitis, septicaemia and death.

206 The following statements are correct concerning intermittent claudication

- A Vasospasm plays a major part in the pathogenesis of vaso-occlusive disease
- B Vasodilators are of significant benefit in the immediate management
- C Sympathectomy may aggravate the condition by diverting blood from muscle to skin
- D The differential diagnosis includes sciatica
- E Claudication commonly occurs in the thigh before the calf

207 Risk factors for the development of peripheral vascular disease include

- A Cigarette smoking
- B Obesity
- C Hyperlipoproteinaemia
- D Diabetes
- E Hypertension

208 Recognised treatment of intermittent claudication secondary to peripheral vascular disease includes

- A Low-dose aspirin
- B Exercise
- C Weight loss
- D The use of beta blockers in hypertensive patients
- E Stopping smoking

209 Paraphimosis

- A May be iatrogenic
- B Can lead to gangrene
- C Should be treated with ice packs
- D May require an emergency dorsal slit
- E Is more common in diabetics

CD

Intermittent claudication refers to severe, cramping pain, usually in the calf, precipitated by exercise and relieved by rest, caused by inadequate blood supply to exercising muscles. Rest pain is worse at night and its relief is attempted by hanging the foot out of bed.

The vast majority of patients with intermittent claudication have severe arteriosclerosis of the major arteries of the leg. Vasodilators are of doubtful value.

Sympathectomy leads to vasodilation and can be very useful in the management of claudication, and especially of rest pain.

ABCDE

The major established risk factors include cigarette smoking, hypertension, obesity, diabetes and Frederickson's types II and III hyperlipoproteinaemia.

The patient is advised to stop smoking, lose weight and take regular exercise in order to open collateral channels to improve blood supply. He should be reassured that most patients do not require surgery and many improve with regular exercise over a five-year period.

BCE**ABD**

Paraphimosis is an irreducibly retracted foreskin. It can be caused by medical staff who fail to replace the foreskin after urinary catheterisation.

The oedematous prepuce is difficult to reduce and may require persistent, gentle, but firm, pressure. A dorsal slit or formal circumcision may be required to obtain a satisfactory result.

210 In the acute abdomen

- A Raised amylase is specific for pancreatitis
- B Plain radiography is usually helpful
- C A diagnostic laparotomy can be justified
- D The patient will be writhing in pain
- E Pneumonia should be included in the differential diagnosis

211 The following may present with severe acute abdominal pain

- A Acute myocardial infarction
- B Pulmonary embolus
- C Constipation
- D Lead poisoning
- E Herpes zoster

212 Strangulated hernia

- A Need not necessarily lead to bowel obstruction
- B Is associated with a cough impulse
- C Is more likely in inguinal than in femoral herniae
- D May contain bowel or omentum
- E Can be complicated by electrolyte disturbance

213 Renal colic

- A May be very painful, and usually causes the patient to lie motionless
- B May be associated with pain at the external urethral meatus
- C May be accompanied by vomiting and sweating
- D Is usually caused by ureteric obstruction at the level of L4
- E Should not be treated with narcotic analgesics, because these cause ureteric spasm

CE It is useful to categorise the causes of abdominal pain according to the anatomical origin, e.g. intrathoracic (pericarditis, pneumonia, pleurisy), intra-abdominal (diabetes, pancreatitis, hepatitis, gallstones), infection (gastroenteritis, worms, typhoid, peritonitis), endocrine (diabetes, hypercalcaemia, porphyria) or neurological (shingles, tabes dorsalis, nerve root compression, or psychological).

ABCDE Upper respiratory tract infections in children are sometimes accompanied by an abdominal symptom mimicking appendicitis. It is important to be aware of this, because abdominal pain is a common presenting complaint in the A&E department.

In most cases, the diagnosis can be made on history and examination. The nature of the pain, and its exact site, often clarifies the diagnosis. Plain radiography (revealing sentinel loops, or evidence of pneumonia), ECG (showing changes of pericarditis), or blood-gas estimation (in the case of pulmonary embolus) may be helpful.

ADE A strangulated inguinal hernia may present as a painful mass in the iliac fossa accompanied by clinical signs of bowel obstruction, although this is not always the case. A Richter's hernia (usually femoral) contains part of the bowel only. The bowel lumen remains patent and unobstructed.

The cough impulse is not present, and there is a painful, palpable mass in the groin. The mass may contain bowel, omentum, or both. It is often associated with electrolyte disturbance. Because of its narrow aperture, a femoral hernia is particularly liable to strangulate and should be sought out in fat, old ladies.

BC The pain of renal colic is intense, radiating from the loin into the groin, testicle, labia majora or external urethral meatus. The patient typically writhes in pain and requires large doses of narcotic analgesic.

Urine should be tested for blood and an emergency intravenous urogram performed to confirm the diagnosis. In most cases, the calculus will be passed in the urine. Its progress down the ureter may be monitored radiographically, since the majority of stones are radio-opaque.

A diagnosis of drug abuse or Munchausen's syndrome must always be considered, and alternative analgesics prescribed until the diagnosis is confirmed by IVU.

214 In patients with gallstones

- A Most patients are asymptomatic
- B Hypercholesterolaemia is an associated cause
- C Acute pancreatitis is a recognised complication
- D The majority of stones are shown on plain radiography
- E Treatment may be dissolution of the stones with chenodeoxycholic acid

215 Gallstones

- A Are associated with sickle cell anaemia
- B Cause pain that typically radiates to the right shoulder tip
- C Develop when the relative proportions of phospholipid and bile acids increase compared with cholesterol
- D Are associated with the contraceptive pill
- E Are associated with Crohn's disease

216 Acute cholecystitis

- A Will usually resolve with conservative treatment
- B Typically presents with colicky right upper quadrant pain
- C Is associated with a positive Murphy's sign
- D May be treated by cholecystectomy
- E Is diagnosed by oral cholecystogram

- ABCE** Most gallstones develop owing to changes in the relative proportions of bile acids, phospholipids and cholesterol in the bile. An increase in cholesterol, or a decrease in bile acids, leads to cholesterol microcrystal formation, which eventually form gallstones. Increased cholesterol content is associated with the Western diet, but also occurs with long-term oral contraceptive use. Bile acids may fall in patients with abnormal enterohepatic circulation, such as those with Crohn's disease or previous gastrectomy and intestinal hurry. Pigment stones are common in patients with chronic haemolytic disease (e.g. sickle cell anaemia) in whom bile pigment excretion is excessive.
- ADE** Gallstones are commonest in middle-aged females. Typically the patient complains of epigastric pain after eating. As the gall bladder inflames, the pain moves to the right upper quadrant, and may radiate to the shoulder tip from an inflamed diaphragmatic peritoneum.
- ACD** About 15% of all patients with gallstones will develop severe symptoms within 10 years. About 70% remain asymptomatic, and stones may be seen as incidental findings on plain radiography, although only 15% are radio-opaque.
- Cholecystectomy is advised for most patients with gallstones, although medical treatment using chenodeoxycholic acid is sometimes effective in 'dissolving' small cholesterol stones. The gall bladder must be shown to be functioning satisfactorily. It is contraindicated in pregnancy and liver disease. Lithotripsy is an alternative method of treatment.
- Acute cholecystitis is associated with epigastric and right subcostal pain, worse during inspiration. Nausea or vomiting may be present. On examination, the patient may have a mild pyrexia with or without jaundice. Tenderness and guarding will be found in the right subcostal region. Murphy's sign (pain during inspiration on palpation of the right subcostal region) may be positive.
- Treatment of acute cholecystitis is traditionally conservative. The patient is treated with antibiotics and intravenous fluids. This regimen 'rests' the gall bladder and will result in resolution of symptoms within a week in 85% of patients.

217 Haemorrhoids

- A May present as an acutely painful swelling at the anal margin
- B Are vascular cushions
- C Are often the result of constipation
- D Are usually painless
- E May be treated by injection

218 Haemorrhoids

- A That prolapse but reduce spontaneously are known as first-degree piles
- B May cause pruritis ani
- C May be treated by an elastic-banding technique
- D Are typically associated with the passage of mucus per rectum
- E Commonly presents with bleeding on defaecation

DERMATOLOGY

219 Impetigo

- A Is a superficial cutaneous infection, often involving *Staphylococcus aureus* and beta haemolytic *Streptococcus*
- B Tends not to be contagious in children
- C Usually occurs on the face
- D May be treated with both systemic and topical antibiotics in the severe case
- E Is often difficult to differentiate from erysipelas

ABCDE Haemorrhoids, or piles, are arterially supplied vascular cushions, which act as a capacitor in the anus for small, hard stools. They occur deep in the mucosa, at the 3, 7 and 11 o'clock positions, which are the sites of entry of the haemorrhoidal arteries.

There are three degrees of piles: first-degree, which bleed but do not prolapse; second-degree, which prolapse but reduce spontaneously; and third-degree, which prolapse and require manual reduction.

BCE

Symptoms include bleeding on defaecation, pruritis ani and prolapse, which may or may not require manual reduction. Pain occurs with prolapse, and is severe if strangulation has occurred.

Haemorrhoids do not typically cause change of bowel habit, weight loss, passage of mucus, or abdominal pain. Patients require full examination, including proctoscopy and sigmoidoscopy. All patients presenting with rectal bleeding, or any of the above symptoms, should undergo thorough physical examination in the A&E department before referral.

First-degree piles may be treated by sclerosant injection high into the base of the pile in conjunction with a change to a high-fibre diet. Second-degree piles can be treated either by injection or by the use of the elastic-banding technique. Third-degree piles should be treated by formal haemorrhoidectomy.

ACD

This mixed staphylococcal and streptococcal skin infection is common in children living in conditions of poor hygiene. It is very contagious. The hallmark of impetigo is a lesion of the face or hands covered with a heavy honey-coloured crust. The mainstay of treatment is the removal of crusts with warm saline and the application of topical antibiotics, such as Aureomycin or Fucidin. More severe cases should be treated with oral penicillin or erythromycin to prevent post-streptococcal glomerulonephritis.

Erysipelas, on the other hand, is usually a streptococcal skin infection, presenting as a sharply demarcated, erythematous eruption, commonly of the face, quite unlike the pustular, crusted appearance of impetigo.

220 The following statements are correct

- A Erythema nodosum may be associated with sarcoidosis
- B The rash of secondary syphilis may be mistaken for that of pityriasis rosea or guttate psoriasis
- C Leishmaniasis is associated with the sandfly and may present as a solitary cutaneous ulcer
- D Chronic paronychia is commonly caused by a fungal infection
- E Ampicillin is best avoided in glandular fever

221 The following may cause a photosensitive dermatitis

- A Systemic lupus erythematosus (SLE)
- B Diuretic therapy
- C Cow-parsley sap
- D Nalidixic acid therapy
- E Necrobiosis lipoidica

222 In a patient presenting with a painful area of reddened skin, important differential diagnoses are

- A Cellulitis
- B Erythema nodosum
- C Gout
- D Deep vein thrombosis
- E Septic arthritis

ABCDE Erythema nodosum is characterised by a raised, tender cutaneous lesion, usually on the shins, and is associated with tuberculosis, streptococcal infections, sarcoidosis and, rarely, following administration of a sulphonamide drug.

Acute paronychia is a superficial infection lateral to the nail fold and is most commonly caused by staphylococcal infection. It is treated by a small incision, or merely by separating the nail fold from the nail to ensure adequate drainage. The more chronic form, however, is often caused by a fungal infection and will require topical antifungal paint, or oral antifungal treatment.

ABCD Phototoxic reactions can develop as the result of contact with many plants (e.g. certain limes, cow-parsley, celery and figs) and subsequent exposure of the skin to sunlight.

Many commonly used drugs may be responsible for photosensitive reactions, such as sulphonamides, hypoglycaemic agents, diuretics, antihypertensives, antibiotics, phenothiazines and even oral contraceptives.

Therefore, a careful drug history should be taken from all patients presenting with a rash in light-dependent areas.

ABCDE A careful history will often elicit the diagnosis. In septic arthritis, the patient is febrile and unwell. Deep vein thromboses originate in the calf, whereas gout commonly affects the metatarsophalangeal joint of the big toe. Cellulitis is a spreading streptococcal infection, occasionally with an obvious point of entry. There may be associated lymph node enlargement.

Gout commonly presents as an exquisitely painful, red, first metatarsophalangeal joint. It is often thought of as a 'disease of intemperance', the sufferer being overweight and a heavy drinker, but this is by no means always the case. Diagnosis is made mainly on the history and examination. Blood tests may reveal a normal or raised serum urate and the erythrocyte sedimentation rate (ESR) may be elevated. Treatment in the acute phase is by oral administration of non-steroidal anti-inflammatory drugs (NSAIDs) and rest of the affected limb. Intramuscular ACTH or intra-articular steroid injections may help. Allopurinol may be used only after resolution of the acute phase. It may aggravate an attack if given early.